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ORIGINAL
BOUNDARY LINE
BETWEEN
PENNSYLVANIA AND OHIO.

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REPORT OF THE JOINT COMMISSION *on Pa and O. bound*
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APPOINTED BY THE STATES OF

PENNSYLVANIA AND OHIO,

TO ASCERTAIN AND RE-MARK THE

BOUNDARY LINE

BETWEEN SAID STATES,

AS IT WAS ORIGINALLY ESTABLISHED.



COLUMBUS :

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1883.

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JOINT RESOLUTION

Relative to the boundary line between the states of Ohio and Pennsylvania.

WHEREAS, A commission, composed of Joseph M. Rickey, Jas. Mackey and Henry B. Perkins, was appointed by the governor of Ohio, under and by virtue of an act of the general assembly of said state, passed May 3, 1878, and an act supplementary thereto, passed May 27, 1879, to act in conjunction with a similar commission of the state of Pennsylvania in examining as to the true location of the monuments which mark the boundary line between the state of Ohio and the state of Pennsylvania, and in connection with said commission of the said state of Pennsylvania to replace any monuments that have been removed or have become displaced or dilapidated on the boundary line of said states, and to erect such other suitable monuments along said boundary line when determined, as shall be sufficient to properly mark the same; and

WHEREAS, It appears from a report duly made by said commission in conjunction with a like commission upon the part of the state of Pennsylvania to the governor of Ohio, bearing date of February 1, A. D. 1883, and by said governor transmitted to the general assembly, together with the field-notes of their survey, and an accurate map of said boundary line that said commission upon the part of the state of Ohio, and said commission upon the part of the state of Pennsylvania, duly empowered so to do, have resurveyed said boundary line, examined as to the true location of the monuments which marked the same, and have erected suitable monuments along said boundary line sufficient to properly mark the same, and when the boundary line was along a public highway the commissioners have placed index monuments at recorded distances from the true line upon the side of said highway; and

WHEREAS, Said boundary line is now accurately marked and described in said report, and the field-notes and the map accompanying same; therefore, be it

Resolved by the General Assembly of the State of Ohio, That said boundary line, as marked by said commission, and set forth in their report, field-notes and map is hereby accepted by the state of Ohio as the true boundary line between the state of Ohio and the state of Pennsylvania.

Resolved, That the auditor of state is hereby required and directed to carefully preserve in his office the report of the joint commission, field-notes and map, together with two reports made by the Ohio commission, and to cause one thousand (1,000) copies of said report, field-notes and map, together with the laws of Ohio and Pennsylvania, creating and instructing their respective commissions, as well as this joint resolution, to be published and bound in cloth, for distribution as he may think best, and the cost of printing and binding the same to be paid for out of the appropriations made for printing and binding for the state, the accounts therefor to be audited by the supervisor of public printing and approved by the commissioners of printing.

O. J. HODGE,

Speaker of the House of Representatives.

R. G. RICHARDS,

President of the Senate.

Adopted April 17, 1883.

REPORT OF THE JOINT COMMISSION

APPOINTED BY THE STATES OF PENNSYLVANIA AND OHIO,
TO ASCERTAIN AND RE-MARK THE BOUNDARY LINE
BETWEEN SAID STATES, AS IT WAS
ORIGINALLY ESTABLISHED.

SAID COMMISSION CONSISTING, ON THE PART OF PENNSYLVANIA, OF JAMES WORRALL,
JAMES McCULLOUGH AND WILLIAM W WALKER; AND ON THE PART OF OHIO,
OF JOSEPH M. RICKEY, JAMES MACKEY, AND HENRY B. PERKINS.

Prior to the Revolution, much uncertainty existed with regard to many of the colonial boundaries. Warm and even bloody conflicts took place between the inhabitants of the different colonies. This was especially true with regard to Pennsylvania and Maryland. To end the strife, England, in 1763, sent over Charles Mason and Jeremiah Dixon, both prominent English surveyors, to determine and mark the boundary between those colonies. With characteristic contempt for every thing colonial, the stones designed to mark the lines were shipped with the commission. At the period of the Revolution and shortly after, there was a general effort made to settle state boundary lines. Pennsylvania at that date, jointly with the adjoining states, settled all, or nearly all, her boundaries. The joint commission appointed by the states of Virginia and Pennsylvania, to determine their dividing boundaries, consisting, on the part of Virginia, of James Madison and Robert Andrews, and, on the part of Pennsylvania, of David Rittenhouse, George Bryan and John Ewing, agreed August 31, 1779, that the southern boundary of the state of Pennsylvania should be Mason and Dixon's line (North Latitude $39^{\circ}, 43', 26.3''$) extended west to a point five (5) degrees of Longitude west of the Delaware river, and from thence a line to be produced due north as far as the states extended, should be its western boundary. The action of this joint commission was ratified by Virginia, June 23, 1783, and by Pennsylvania, April 1, 1784, and declared to be "the boundary forever." Mason and Dixon's line was accordingly extended to the point indicated by James Neville on the part of Virginia, and Alexander McClean on the part of Pennsylvania, surveyors. This line was tested and corrected by astronomical observations and permanently marked in 1784. The line denoting the western boundary of Pennsylvania was extended from the point agreed upon, north as far as the Ohio river in 1785, and in the succeeding year (1786) it was produced to Lake Erie; Andrew Ellicott being chief engineer. This latter (the survey of 1786) is the line to which this report mainly refers.

When the original survey was made, a large corps of ax-men was employed, and a vista was cut through the forest from twenty to thirty feet wide, and monuments of such stones as were at hand were erected at irregular distances. Thus marked, the line's position was indicated, for the time perhaps, with satisfactory plainness. But in process of time, this vista in many places disappeared. Many of the monuments also which had been erected to mark the line, were by various causes removed, displaced or destroyed, and some of those remaining rendered doubtful. For long distances—amounting in one instance to 28 miles, 347 feet, and in another to 33 miles, 2,324.4 feet—there was not an original monument (that had not been moved from its original position) left to indicate the line's true location. The results of the uncertainty caused by this state of things, were disputes, and in some cases angry quarrels between the parties on opposite sides of the line. A resort to litigation failed to settle the disputes, because no court or jury of either state, or both states combined, could legally determine the line's true location. In this vexatious dilemma, the citizens of each state petitioned their respective legislatures to appoint a commission to jointly ascertain and re-mark the line as established in 1786. The legislatures of both states responded favorably, and bills were passed by them, directing their respective governors to appoint said commission (see appendix); that of Pennsylvania approved May 18, 1878, and that of Ohio approved May 3 of the same year. Accordingly the governors of said states appointed the commissioners before named. These commissioners met at Pittsburgh on the 14th day of October, 1878, and organized by electing James Worrall, of Pennsylvania, chairman, and James Mackey, of Ohio secretary. After full consideration of the subject, it was resolved to meet on the 28th day of the same month, at Smith's Ferry, near the south end of the line, to commence the survey. In the meantime diligent effort was to be made to obtain a map, plat or report of the original survey, its methods, and all the information obtainable concerning it. But neither in Richmond, Harrisburgh, Columbus or Washington City, could, at that time, any original map or field-notes of the survey of 1786 be obtained. (Afterwards partial maps of the line as originally surveyed, were found.) It was therefore deemed advisable, before assembling the entire surveying corps, in order to obtain fuller information with regard to the line and the monuments marking it, that one member of the joint commission from each state, should visit each end of the line, and ascertain the condition of the monuments there to be found, and determine at which point it would be best to commence the survey. James Mackey and William W. Walker were

named to perform this duty. Accordingly, on the 28th day of October, they went to Smith's Ferry (Joseph M. Rickey accompanying them) and examined the monuments in that vicinity. James Mackey and William W. Walker crossed the Ohio river and examined a monument on the south side of it, on the boundary between Pennsylvania and West Virginia. They then passed to the north end of the line, where, four miles and two thousand three hundred and forty feet from the bank of Lake Erie, was found an original monument, believed to occupy its original position; and in view of all the circumstances, it was decided to commence the survey at the north end of the line. The 6th day of November of the same year was appointed as the time for commencing the work, and the other members of the joint commission were notified accordingly.

On the day appointed (November 6, 1878) all the members of the joint commission met at Conneaut, Ashtabula county, Ohio, near the northern terminus of the line. Here, the preliminaries of the survey were arranged. On the recommendation of James Worrall, A. B. Leuffer, of Philadelphia, was appointed chief engineer and the details of the survey entrusted to him. It was resolved to obtain the meridian of the monument before referred to, and produce it first north to Lake Erie, then south to the Ohio river—taking notes of all the important objects connected with, or in the vicinity of the line; also, investigating and carefully noting all the monuments and other evidences of the line's true position, as established by the survey of 1786. In conformity with these instructions, as the survey proceeded, and an accurate measurement of the line was being made, topographical notes of important adjacent objects, both natural and artificial, were taken. Very many lateral measurements were made from the transit line to objects that could be relied on, to assist in determining the line's true location, or the boundaries of the original vista in which the line was located. Old settlers were interviewed, and all the information in this way obtainable was collected and recorded. These notes, investigations, measurements and records were made, on behalf of the state of Ohio, by Joseph M. Rickey and James Mackey, and on behalf of the state of Pennsylvania, by William W. Walker. Copious notes were also taken by G. D. Hersey and T. A. Snyder, chainmen. All available means were used to ascertain, with the utmost possible accuracy, the exact location of the line laid down by the survey of 1786; and it is confidently believed that the efforts were successful, and that the original line is substantially restored in the new, and will be thus accepted by those interested, and that all serious disputes concerning it will soon pass away.

It was deemed advisable, in view of the fact that the bank of Lake Erie, at the point crossed by the line, is being washed away at the rate of two or three feet per annum, to place the initial or most northern terminal monument, from which the monuments and distances were reckoned (which point, in the field-notes of the survey and in this report is called zero), a considerable distance from the lake, so that it would be in no danger of meeting the fate of its predecessor, placed there ninety-six (96) years ago, and which, though placed several rods south of the bank of the lake, was many years since undermined, and had fallen down the bank. A spot was therefore selected for the site of this important monument, two thousand three hundred and forty (2,340) feet from the top of the bank of Lake Erie, and two thousand four hundred (2,400) feet south from the water's edge.

When the survey reached twenty-two miles south of this point on the 6th day of December, 1878, snow fell fifteen inches deep; and as just in advance lay, largely covered with water, six miles of swamp, which one of the Western Reserve surveyors of 1796 pronounced, after passing through it, "the most abominable swamp in the world," it was deemed unwise, under the circumstances, to attempt to proceed; and the party disbanded until a more convenient season.

On the 1st of January, 1879, W. W. Walker visited the swamp to ascertain whether or not it was so frozen as to allow the surveying party to pass over it on the ice. He found it was not; though the water had to a considerable extent drained off. He engaged parties in the vicinity to give notice when its condition would permit the prosecution of the survey. On the 15th day of the same month, it being deemed practicable, work was resumed; and by great and persevering effort, the line was extended through the swamp to a point twenty-seven miles and four thousand six hundred and twenty and nine-tenths feet from zero, when, on the 22d day of the same month, the party again disbanded.

On the 1st of April, 1879, operations were resumed. It was deemed necessary by the commissioners present, to obtain a meridian at the point to which the line had been produced the preceding January, and our line corrected by it, before advancing farther south. After several unsuccessful efforts, in consequence of the very unfavorable weather, a satisfactory observation of Polaris was obtained, and a meridian was established. Conforming the line to this meridian, it was extended south without cessation or adjournment until the 27th day of May, when, having reached the Ohio river, the southern terminus of the line, and connected it with the monument before spoken of on the south side of the river—the initial survey being completed—the party disbanded.

It was the wish and design of the joint commission, that meridians should be obtained at frequent intervals, as the survey progressed, and the line, if in error, corrected by them. But owing to unfavorable circumstances, it was found impossible to do so; and in view of the great expense of delaying the corps, it was deemed advisable to proceed with the survey, taking meridians when practicable, and that afterwards, in favorable weather, two persons—one from each state—should pass along the line and take meridians at such places, and make such investigations and revision of the transit line, as should be deemed necessary to discover its errors, their location and amount, and to procure the data necessary for their elimination and the correction of the line. Accordingly, as the survey progressed, efforts were made to obtain meridians on the 2nd 16th, 22nd, 28th, 33d, 41st, 48th, 52nd, 55th, 63d, 66th, 80th, 85th, 88th and 92nd miles. Some of these efforts were successful, satisfactory observations of Polaris being obtained. Others, owing to unfavorable circumstances, were not.

It being evident to the joint commission that the appropriations made by the respective states were insufficient to complete the marking of the line, without which the survey already made would be useless, efforts were made to secure from each state the additional needed appropriations. Ohio responded promptly, and an additional appropriation, deemed at the time sufficient, was granted; but in Pennsylvania, the legislature of 1879 failed to provide the needed funds, and the immediate completion of the work was thereby prevented. This was unfortunate, and very much increased its cost; because time, with the many various influences, is always at work to produce change and destruction. In the two years of delay, occasioned by this failure, so many of the stakes were removed, and other evidences of the position of the line left by the surveying party, that a re-survey of many parts of it was rendered necessary.

As soon as it was known that no immediate appropriation would be made by Pennsylvania, it was deemed essential, in order to secure the benefit of the work already done, to immediately revise the line, and take the necessary meridians. Consequently, on the 15th day of September, 1879, G. D. Hersey, a scientific gentleman in the employ of the Ohio commission, on behalf of the state of Ohio, and W. W. Walker of the Pennsylvania commission, on behalf of the state of Pennsylvania, commenced the proposed revision. They passed along the line—took twenty-three (23) meridians on it at different places—re-traced much of it, searching out its deflections, ascertaining their exact location and amount, thus procuring the data necessary for its final correction. Six

miles in the swamp, and four at its northern extremity, were not at this time revised; but their revision was deferred until August, 1881, when the same parties completed it, taking three additional meridians, and connecting the line with a station established by the United States Lake Survey, called the "State Line Flag."

This revision required considerable time, and much very careful work, both night and day; yet it could not be dispensed with, as the data it furnished were essential to the correct establishment and mapping of the line. In connection with the revision, the course of the line for considerable distances was obtained by night, by lamps or signals erected at suitable stations. By this means, for example, views were obtained connecting the forty-second mile with the forty-eighth, and the latter with the fifty-fourth. Other points were similarly connected, and these courses compared with meridians established at the stations of observation.

The above-mentioned investigations demonstrated that about sixty-two (62) miles of the northern part of the line of 1786 were not a true meridian, but deflected slightly into the north-west.

The question whether a true meridian line should be adopted as the boundary, and marked accordingly, or the old line re-established and marked, was discussed by the joint commission, its chairman, James Worrall, and James McCullough, of Pennsylvania, advocating the former position, and the other members advocating the latter position, which was adopted, the line of 1786 being re-established and re-marked.

On the 13th day of September, 1881, the revision of the line being completed, and the Pennsylvania legislature having at its previous session made the necessary appropriation, the joint commission met at the call of the chairman, at Pittsburgh, and after deliberation, the following method of marking the line was adopted:

The most northern monument shall be placed at zero, the initial point of measurement, as adopted by the survey, twenty-four hundred feet south of the edge of the waters of Lake Erie; and as a rule, a monument shall be placed at the terminus of each mile, measuring south from that point, to the Ohio river, the southern terminus of the line. Each monument, except the two extreme, or terminal ones, shall consist of two solid sandstones; the one, a cube fifteen inches on a side, called in this report the "monument;" the other called the "index," one foot square and three feet long. The monument (cube) to be placed invariably on the line, and sunk until its upper surface, shall be about two feet below the surface of the ground.

On the level and dressed upper side of each monument shall be cut

a deep cross exactly on the line, and at the terminus of each mile. Where no highway lies on the line, the index shall stand upon the monument, with ten or twelve inches of its upper end above the ground. One foot of the upper end of the index to be dressed one foot square, with an apex one inch high. On the north dressed face of each index, shall be engraved the number of miles it stands from zero, with the letter M at the right hand of the figures. On the east side shall be engraved the letter P, and on the west side the letter O, and on the south side "1881." Should the line lie along a highway the index shall be set at right angles to the line, twenty-five feet either east or west of the monument. If to the west, "25 F" shall be engraved under the P, and if set to the east, the same shall be engraved under the O, to show in either case, the index is twenty-five feet either east or west of the sunk monument on the line.

These rules were observed with regard to all the regular monuments except five; those designed to mark the terminus of the nineteenth, twenty-third, twenty-seventh, sixty-fifth, and ninety-first miles, which were set at recorded distances from the regular position, because the terminus of the mile was in a swamp or other unsuitable locality. Besides these, there were placed upon the line, three other monuments, at irregular distances; one set upon a summit on the forty-second mile, another on a summit on the forty-eighth mile, and one on the sixty-fifth mile in the Mahoning valley. [See Field Notes].

It was further determined that the two terminal monuments, one at each end of the line, should be of granite. The joint commission appointed Henry B. Perkins, of Ohio, and William W. Walker, of Pennsylvania, to superintend the work and prosecute it to completion.

Accordingly, on the 16th day of September, 1881, the above-named commissioners visited Cleveland and examined different specimens of stone, consulted with the representatives of the different prominent companies operating the large stone quarries in that vicinity, and finally contracted with the Ohio Building Stone Company (operating the North Amherst quarry) for the required sandstone monuments, said company agreeing to commence work upon and ship the stone immediately.

It was desired to have the stone shipped at as early a date as possible, so that their delivery from railroad stations to their points of designation on the line might be effected during the season of good roads. But the immense and unprecedented amount of business on the railways caused the most annoying delay of their shipment and delivery, so that the commencement of the work of placing the monuments on

the line was delayed until the 23d day of October, at which date the work was commenced, William W. Walker having general supervision of the work, and G. D. Hersey acting as engineer.

Notwithstanding earnest and unremitting efforts were made by Henry B. Perkins and William W. Walker, to secure an early shipment of the monuments, they were not all delivered at the designated railroad stations at the south end of the line until the following December. This unexpected and vexatious delay greatly augmented the difficulty and expense of their hauling and final delivery.

It being the express wish of the joint commission, that the work should be completed at as early a date as possible, it was prosecuted vigorously, with but two short intervals, until the twelfth day of January, 1882, when having set eighty-four monuments, and built the foundation for the north terminal monument, the party was compelled to discontinue operations, as the stones near the south end of the line were not all delivered, and the condition of the roads was such as to render their hauling almost impossible.

After deliberation and consultation, it was concluded that the terminal monuments should be of the following dimensions: The base to be three feet square, eighteen inches deep, beveled around the top four inches back; the shaft to be placed thereon to be four and one-half feet long, and twenty-eight inches square at the base, and gradually tapering until within six inches of the top, then rapidly to a point or apex; to be of Quincy granite, dressed neatly but not polished, with inscriptions hereinafter referred to and explained.

When it was known that all the monuments had arrived at their destinations, work was resumed. Commencing at the north end May 15, 1882, the granite monument was placed at the zero point, upon the foundation built the preceding October. This foundation was built of sandstone, laid in cement, five feet ten inches deep; four feet square at the top, and gradually enlarging toward the bottom. The cap stone of this base is four feet square and twenty-one inches deep; its upper surface just below the surface of the ground. The granite monument erected thereon, base and shaft weighs four thousand eight hundred pounds. It stands in the midst of a slight artificial mound, and on a very slight natural summit; the land descending both north and south.

On the east side of the granite base is engraved the word "PENNSYLVANIA," and on the west side is engraved the word "OHIO." On the north side of the shaft these words are engraved: "Erected in 1881 by a joint commission appointed by the states of Pennsylvania and Ohio, to re-survey and re-mark the boundary line, as established in 1786."

Having completed the work at this place, the party proceeded to the south end of the line, and set the seven remaining sandstone monuments from the eighty-fifth to the ninety-first mile, inclusive, and built a base for the terminal granite monument on which it was erected; the whole structure, the sandstone base, the granite base and shaft, including inscriptions, being a duplicate of the north terminal monument before described.

On the first day of June the party disbanded, leaving three monuments yet unset, viz.: those designed to mark the termini of the 25th, 27th and 28th miles, their sites being under water when the other monuments in their vicinity were set. These were afterwards put in position, and the entire work was finished by the same parties August 15, 1882.

ORIGINAL MONUMENTS.

While passing over the line in the recent survey, nineteen monuments placed on it by the survey of 1786 were found, and satisfactory evidence of the former existence, and approximate position of six others, which had formerly marked it, but had been removed and lost. Of all these, only two gave satisfactory evidence that they occupy exactly the same position they did originally. Five have not been disturbed by human agency, and were substantially correct, having only been affected by frost, and other natural forces, by which they were thrown more or less out of their original perpendicular position. Twelve had been displaced by human agency, and replaced, and the remaining six had been removed, destroyed, or lost.

The following is a description of the above monuments, together with their former and present positions, as far as known, beginning at Lake Erie and numbering south. No permanent line marks were made by the re-survey on any of these monuments. Monument numbered was found lying in a corner of a worm-fence, one hundred and ten feet from the top of the bank of Lake Erie, and one hundred and seventy feet south of the water's edge:

No. 1. Twenty-two hundred and thirty feet north from zero. The ground on which it originally stood was many years ago washed away, causing it to fall down the bank of the lake. It was drawn up and placed where it was found by the re-survey, by the farmers owning the adjoining lands. As re-set by the joint commission, it stands on the restored line at the north side of a highway called "Lake Road," nineteen hundred and forty-seven feet north of zero, twenty-eight inches

under, and eight inches above the surface of the ground. It is a water-worn flagstone, or slab, nearly three feet square, and six inches thick. It bears on its side this inscription, placed there by the survey of 1786, viz.: "Pennsylvania—1786."

No. 2. Four miles south of zero, an irregular, oblong, granite boulder, weighing perhaps four or five hundred pounds. On its south-east side was engraven a large capital letter P. The testimony of citizens in the vicinity, some of whom had been acquainted with its location for more than sixty years, all agreed that the stone stood substantially in its original position, and had always, by all parties, been regarded as indicating the true location of the line of 1786. From the center of this stone the initial meridian of the recent survey was produced, north and south. To this monument the restored line was made to conform, called in the field-notes the "Culver Monument."

No. 3. Twelve miles and eleven hundred feet south from zero. Many years ago removed and placed in the foundation of a barn, and is not now to be seen.

No. 4. Thirty-two miles and three hundred and forty-seven feet south from zero. This monument is a large egg-shaped granite boulder, with a large P engraven on its east side. It lies in an open field, and is believed to occupy at least very nearly its original position, and is one of the four standard monuments, to which the restored line is made to conform. Called the "Brown Monument."

No. 5. Thirty-nine miles and three thousand and nineteen and one-half feet south from zero. Is a light colored granite monument, which was displaced by passing teams, and lay in the corner of a fence for years, and was afterwards re-set, as nearly as they could, in its former position, by neighboring landowners. There is a rough cut P on its east side. It stands on the restored line, having been moved one and seventy-seven one-hundredths feet west to conform to it.

No. 6. Forty-five miles and forty-two hundred and fifty feet south from zero. A large granite boulder lying in an open field. In 1828 it was made part of the foundation of a barn, and in renewing the foundation in 1881 it was removed, and the large P cut upon it by the survey of 1786, which indicated its character, was discovered.

No. 7. Fifty miles and forty-nine hundred feet south from zero. This monument is lost, and its character unknown.

No. 8. Fifty-four miles and thirty-five hundred and ninety-five feet south from zero. Supposed to be a large granite boulder, yet to be seen, found in wheelway of public road; but, if genuine, the P is too much effaced to be identified with certainty.

No. 9. Fifty-five miles and five thousand feet south from zero. Sandstone, marked with the usual P, but lost.

No. 10. Sixty miles and fourteen hundred and fifteen feet south from zero. Many years ago placed under the corner of a house, and not now visible.

No. 11. Sixty-two miles and fifteen hundred and sixty and two-tenths feet south from zero. An undressed granite rock about one hundred and two feet south of its original position, having been removed many years ago to mark a farm corner P on its east side. Moved east nine inches, to conform to the restored line. Called the "Shiehy Monument."

No. 12. Sixty-five miles and twenty-six hundred and seventy-one and four-tenths feet south from zero. This is one of the two monuments, believed to occupy exactly their original position. It is a granite boulder, supposed to weigh six or seven hundred pounds, so buried that its upper surface is level with that of the ground. The line of 1786 seems to have passed over it, and the P usually cut on the east side was placed on its upper surface. It lies on the first summit south of the Mahoning river. The restored line crossed this stone at the foot of the stem of the P. Called the "Barkley Monument."

No. 13. Sixty-seven miles and five thousand and thirty-six feet south from zero. Long since displaced or lost.

No. 14. Sixty-nine miles and seven hundred and seventy-two feet south from zero. Stands in the middle of a highway. Was at one time removed by order of an Ohio path-master, and afterwards, when the P upon it was discovered, it was replaced, and the side marked P was turned toward the west. It is on the line. Called the "Bayar Monument."

No. 15. Seventy-one miles and twenty hundred and twenty-two and one-half feet south from zero. A comparatively small stone, nearly round, marked P on east side, buried in the middle of the highway. Like the former, it was at one time removed, and afterwards replaced where it now lies, buried on the line. Called the "Fosnot Monument."

No. 16. Seventy-three miles and thirty-eight hundred and sixty-eight and one-half feet south of zero. An irregular, comparatively small sandstone, but slightly sunk into the ground. Marked P on east side; believed by the neighboring citizens to be but slightly, if at all, removed from its original position. Called the "Lafferty Monument." Moved thirteen and one-half inches east, to conform to the restored line.

No. 17. Seventy-four miles and seventeen hundred and forty-one feet south of zero. An indifferent sandstone, under the corner of a fence, marked P.

No. 18. Seventy-six miles and twenty-four hundred and seventy-one feet south of zero. Similar to No. 17, found by Henry Long, lying at the east side of the highway, and removed by him to his door-yard for a "relic," where it remains.

No. 19. Seventy-nine miles and three hundred and eighty-six and one-half feet south from zero. A sandstone, seemingly quarried, and roughly dressed into its present shape. It is about three feet long, sixteen inches broad and six inches thick. Under the P, on the east side, is engraven the figures "77," and on a small stone buried at its eastern base, are cut the letters A E. It was once displaced to accommodate a threshing machine. It was moved three feet and three and five-eighths inches west to the established line. It stands on the first summit south of the Pittsburgh, Fort Wayne and Chicago Railroad. Called the "Hartshorn Monument."

No. 20. Eighty-two miles and three hundred and seventy-three and seven-tenths feet south from zero. Is a roughly dressed sandstone, similar to the preceding, marked P on its east side. Stands on the first summit south of Little Beaver creek, about three hundred feet above the stream. The summit commands a beautiful view of the surrounding country. The monument leaned somewhat, but is believed never to have been moved by human agency, until adjusted by the recent survey. Three and one-half inches west to conform to the established line. Called the "Booth Monument."

No. 21. Eighty-five miles and four hundred and fifteen and four-tenths feet south of zero. This is a slightly dressed, irregular sandstone slab, fourteen inches high, above ground. Sixteen inches broad at the surface of the ground, and four inches thick. It is deep set, on perhaps the highest summit on the line. It stands erect, and quite firm, in dry, gravelly soil in a forest, and all the evidence harmonizes with regard to

it, to the effect that it occupies exactly the same position in which it was placed by the survey of 1786. Consequently, it was accepted as denoting the exact meridian of the line which passes through it, and also through No. 12. To this line all the original and other monuments, from the eleventh to the southern terminus of the line, were made to conform. It is marked P on its east side. Called the "Beaty Monument."

No. 22. Eighty-six miles and twenty-two hundred and seventy feet south of zero. Is a small sandstone, the top of which is taken off horizontally, leaving only the stem of the P on the monument. The upper part is lost. It was maliciously displaced some years ago, and afterwards the citizens in the vicinity replaced it as nearly as possible in its original position. It was moved three and one-half inches east to conform to the established line. Called the "Hamilton Monument."

No. 23. Eighty-eight miles and twenty-six hundred and sixty-four and seven-tenths feet south of zero. A sandstone, thirty inches long, twenty inches wide at the base, thirteen inches at the top, and six inches thick. Was once displaced by passing teams, and afterwards replaced by adjoining landowners. Moved nine inches west to the restored line. Called the "Fisher Monument."

No. 24. Ninety miles and twenty-two hundred and forty-eight feet south from zero. A roughly dressed sandstone, nearly four feet long, eighteen inches wide, and seven inches thick. Though it leaned considerably to the north-west, it had not been tampered with. Marked with the usual P on the east side. Straightened up to conform to the established line. Called the "Hood Monument."

No. 25. Ninety-one miles and twenty-four hundred and sixty-six feet south of zero. Lying near the line, marked P; reset on the line.

The four standard monuments, to which the restored line was adjusted, were the second, fourth, twelfth, and twenty-first, as before stated. Commencing at the south end of the line, at the Ohio river, or at the original monument before referred to, on the south side of the river, which was ascertained to stand on the meridian of the restored line, and tracing it north, the line passes through the twenty-first and twelfth monuments, their position being accepted as indicating the exact location of the original line of 1786. This line, being a true meridian, is produced to the terminus of the sixty-second mile from zero. Here the course slightly changes, and a divergence of one and

sixty-nine hundredths of a foot per mile, into the north-west, is introduced. This direction is maintained through the fourth monument to the terminus of the thirty-second mile from zero, where another angle is introduced, increasing the divergence to one and eighty-five hundredths of a foot per mile. This direction is maintained through the second monument to the northern terminus of the line at Lake Erie.

All of which is respectfully submitted, together with a map made by G. D. Hersey, of the line as surveyed and marked with monuments, and which is intended as a part of this report.

JAMES WORRALL,
JAMES McCULLOUGH,
WILLIAM W. WALKER,

Commissioners on behalf of Pennsylvania.

JOSEPH M. RICKEY,
JAMES MACKEY,
HENRY B. PERKINS,

Commissioners on behalf of Ohio.

February 1, 1883.

SURVEYOR'S REPORT

OF THE RE-SURVEY OF THE BOUNDARY LINE

BETWEEN

PENNSYLVANIA AND OHIO, A. D. 1881.

To the Joint Boundary Commission :

GENTLEMEN: At the time the re-survey of the State boundary was begun, scarcely anything was known concerning it, except that it was described as being a meridian line. As may be more fully seen by reference to the Commissioners' report, no official information relating to the original survey of the boundary could anywhere be found. So it was not known by what methods the first line had been run, nor with what degree of precision it might be expected to conform to its verbal description. So, too, in the entire absence of written records, the restoration of the original boundary must depend upon such monumenatal evidences of its true position as still remained upon the boundary itself. Accordingly a survey of investigation was made for the purpose of collecting and systematizing all such evidence as could be discovered. The restoration of the old boundary has been made, founded upon the data furnished by that survey. The methods of executing the survey and the results of the restoration dependent thereon is the subject of this report.

The nature of the evidence sought for is shown essentially in the following schedule of things to be noted :

1st. Monuments of the original survey, and collect all available facts and traditions concerning each one discovered as to whether it be in place, and if not, the nature and probable extent of its displacement.

2d. Monuments of surveys, whether old or new, made subsequent to the year 1786, and ascertain the degree of reliance placed upon such monuments by all parties interested in them.

3d. Line fences as actually built and purporting to be on the State line.

4th. Highways laid out and maintained along the State line, and whether by both States mutually or by one alone, and which one.

5th. Evidence of the old vista. For tradition said that the first surveyors had cut a wide vista through the forest, within which opening the boundary lay. Consequently note was taken of the large trees and stumps of trees, that were manifestly quite large timber in 1786, and which evidently stood near the vista margins, and were therefore not cut down.

The condition and peculiarities of the old line being altogether unknown, no attempt was made to actually retrace on the ground any portion of it. The survey, therefore, was executed by the method of rectangular co-ordinates. The true meridian passing through an original monument discovered near Lake Erie, was taken as a prime meridian or base-line. From the base-line, measurements were made to the various objects connected with the purpose of the survey. They were made in feet and are called "ordinates" in this report. The base-line was also measured, beginning at an arbitrary position at Lake Erie, assumed as a starting point, and measuring southward, recording distances in miles and feet, so that the relative position of the points were known independently of one another as being so many miles and feet south from the starting point, and so many feet either east or west from the base-line.

For making alignments, the "Engineer's Transit" was the instrument employed. Heller & Brightley, of Philadelphia, Pa., are the makers. The circle is $6\frac{1}{2}$ inches in diameter, graduated to minutes. Telescope, reversible in bearings, length $11\frac{1}{4}$ inches; diameter of object glass $1\frac{1}{4}$ inches; weight of instrument, including tripod, $24\frac{1}{2}$ pounds. The transit stations were wooden stubs driven even with the surface of the ground and centered with a tack. The signals sighted upon were wooden rods, 8 to 12 feet long, painted alternately red and white, and shod with a steel shoe terminating in a point in the axis of the rod.

The measurements were made with steel tapes. For short distances the pocket tape, as made by Chesterman, was used. For longer distances, and especially the base-line, the "Engineer's Tape," as made by Wm. Young & Sons, of Philadelphia, was employed. It is a narrow ribbon of steel about one-eighth wide by one-fortieth inch thick, and 100 feet long, guaranteed by the makers to be U. S. standard length. Linen tapes were used for making the numerous measurements of a less important character. Tally pins, of such a construction as to ensure their dropping in a plumb line, were used for making chain-lengths.

The measuring of the boundary was done along the line cleared for the transit. The degree of precision aimed at, was that which could be accomplished by skilled chainmen, working with the steel tape and tally

pins in the usual way. The same tape was used for the whole line. Several of the miles coming on moderately even ground were remeasured with a resulting discrepancy ranging from $1\frac{1}{2}$ to 4 inches. The transit stations were entered in the chain notes, that they might afterwards be found, but mainly for the purpose of rectifying the transit line as hereafter described. On the transit line, and at the terminus of each mile, temporary wooden posts were set as convenient points to measure from in locating the restored boundary on the ground.

The alignment was done with the transit before mentioned, running in the usual way by backsights and foresights, the length of "sights" ranging from a few hundred feet to a mile or more, according to the nature of the country, but generally about one-fourth mile. In the first place, the meridian was observed at Lake Erie, and through the meridian marks the transit line was prolonged southward several miles. The meridian was then observed again, the direction of the last foresight of the transit line compared with it, and the accumulated deflection error recorded. Through the new meridian marks the line was again prolonged and the process repeated to the close of the work at the Ohio river. Afterwards the meridian marks were tested by re-observation, and also the direction of the transit line ascertained by comparison with the meridian at shorter intervals than had been done at first. [See Com. Report.] Thus the transit line was divided into sections of three to six miles each, the distance between two consecutive astronomical stations being a section.

The transit line having been run in the manner described, its deflection errors were distributed and the base-line deduced. Each section was considered separately. The direction of the initial and final foresights was known, having been directly compared with the meridian. The change of direction after running four or five miles, was usually about one minute of arc. The accumulated change of direction as measured in the final foresight, was uniformly distributed over the section, that is, the *change of direction* at each transit station was taken to have been uniform for the section. The direction errors resulting from any tendencies to reverse curvature in a section were of course not eliminated, but it is thought the sections were made sufficiently short to provide against any serious consequence from this source. Several opportunities were offered for testing the reliability of the mode of rectification adopted and shown to be in the main correct. The base-line probably coincides with the true meridian as near as can be expected, from the manner of running the transit line.

The divergence of each "sight" of the transit line from the true

meridian having been determined as above described, the distance of each transit station east or west from the base-line was then computed, and its position with reference to the base line was known. The ordinates as measured in the field were reckoned from the transit line, hence, the corresponding correction was applied to each ordinate to make it read from the base-line, and all points of the survey became known in rectangular co-ordinates.

The transit line, as run on the ground, was not in one unbroken line, it being necessary to run on parallel offsets, in order to avoid obstructions, and also to keep in the close proximity of the State boundary. The offsets were made by setting off equal distances at backsight and foresight stations.

The geographic position of the State line, is derived from a geodetic point on the U. S. Lake Survey, as is shown in the following extract from correspondence between the officers of that Survey and the Boundary Commission.

"The nearest point at which the latitude and longitude have been observed is Erie. Pennsylvania referred to the Beacon Light House, No. 1, behind the north pier, entrance to Erie Harbor. The nearest marked geodetic point to the intersection desired [State line and lake shore] is the secondary triangulation station, "State Line Flag," located about two miles easterly from the State boundary line.

The observed latitude and longitude of Erie Beacon, No. 1, are :

Lat., $42^{\circ} 09' 17''.85$

Long., $80^{\circ} 04' 46''.86$ W.

The latitude and longitude of station "State Line Flag" are:

Lat., $41^{\circ} 59' 23''.70$.

Long., $80^{\circ} 29' 14''.97$;

Derived geodetically from Beacon No. 1."

The geographic positions given in the Chaining Notes, contained in this report, are derived from station "State Line Flag."

The true meridian was obtained by observing the North Star, at its greatest elongation east or west, and fixing the direction of the star's azimuth on the ground. The star's apparent north polar distance, for the date of observation being taken from the American Ephemeris, and the latitude of the place being computed by the aid of the measured base line, the azimuth angle was computed. The distance between the instrument and the northern signal was then measured, and the tangent distance corresponding to the azimuth angle set off on the ground.

The same instrument used for running the transit line was employed for observing the meridian. It had no astronomical appliances,

the cross hairs being illuminated by a small lantern in the hand of the observer. The northern signal sighted upon in fixing the azimuth line on the ground was the flame of a small lantern located 600 to 1200 feet from the instrument, and sliding back and forth along a graduated straightedge placed at right angles with the azimuth line. Four and six sights were usually taken with the telescope alternately in the direct and reverse position. The time occupied in sight was generally ten to twelve minutes before and after the date of elongation, which date was obtained from the time of the star's meridian passage at Washington, reduced to the indication of a watch keeping State line time. The position of each "sight" was recorded on the board or straightedge. Each sight was corrected separately for the slight change in azimuth of the star from the position of elongation. The mean of each pair of sights taken with the telescope direct and reverse, was found, and the average of the means taken for the azimuth line. The error is probably about five seconds of arc, or under.

When the field-work of the the re-survey had been completed and reduced to uniformity in the manner foregoing, all the ascertained evidence relating to the position of the old boundary was then shown on paper in a plan of the survey, drawn to a convenient scale, and which showed east and west distances, magnified one hundred times. The following facts were then apparent:

1st. The original line had been very carefully run. It was practically straight and very nearly on the true meridian, its extreme difference of longitude being but one hundred and eleven feet.

2d. Sufficient remains of the "vista" had been collected to mark out its position with a good degree of certainty for the entire length. The vista showed a width of twenty to thirty feet.

3rd. Very many of the original monuments had been destroyed, especially on the northern two-thirds of the boundary, but there were found twelve monuments among those that remained that were still in place or very nearly so.

4th. The monuments yet standing along the boundary, and the traditional positions of some others not now remaining, were seen to lay along a line that traversed the *middle* of the vista.

5th. All the older and best recognized of the monuments of subsequent surveys very nearly coincided with the line of original monuments, the discrepancy nowhere exceeding a few feet.

6th. The line of original monuments divided about midway; all the other evidence of a more fluctuating character, that is, about the same amount of line fences, local corners, center or side lines of high-

ways, lay on either side of it. Such fluctuating lines lay within a strip of land about twenty to thirty feet wide.

7th. The line of original monuments lay wholly within the limits of the old vista.

Therefore, the whole body of evidence collected by the re-survey went to establish the same conclusion, that the actual position of original monuments now lost was either on, or reasonably near straight lines connecting the original monuments that now remain. Accordingly the restoration of the boundary was made upon that principle. As many of the original monuments as were known to be in place, and undisturbed, were taken to be so many points of the "old line" absolutely determined. Only four such points, however, could be established with complete certainty, which were, therefore, made governing points in the restoration. The straight lines were drawn through the governing points in such a manner as best to harmonize with the positions of monuments known to have been more or less disturbed, the greatest required movement of such monuments being three and three tenths feet.

The line so determined was considered to be the "true location" of the original boundary. It is the line to which the displaced original monuments have been restored and upon which the monuments of the re-survey have been planted. It consists of three straight lines nearly equal in length, and presenting slight angles at their points of junction. Beginning at Lake Erie, it bears east of the true meridian one and eighty-five hundredths feet per mile, as far as the terminus of the thirty-second mile; thence it bears east of the meridian one and sixty-nine hundredths feet, to the terminus of the sixty-second mile; thence it follows the true meridian to the Ohio river, and being also in the same meridian with an original monument on the south side of the Ohio river, between Pennsylvania and West Virginia.

It is not presumed that the bearings above mentioned are entirely exact, nor the straight lines perfectly straight. It is to be noted also that the re-survey began at the *north* and was carried southward, while, had the opposite direction been pursued, as was the case with the first survey, it is entirely probable that a somewhat different verbal description would have been the result, owing in some measure to disturbing causes which affect all operations dependent on the plumb line.

The restoration of the boundary being now completed, it only remained in order to fix it on the ground, to compute the distance of each mile point from the base-line, or rather from the temporary mile posts planted when the transit line was run. This was done and the line

indicated on the ground by two series of boundary marks. First, the original monuments, some of which were already on the boundary. Those of the others that had escaped destruction were restored to their proper places. The old were re-set in the same condition as found, inscribing upon them no new marks whatever. Second, the monuments of the re-survey. For a description of the same see the Commissioner's report, and also the "Chaining Notes" in this report.

The map accompanying this report, and to which reference is now made, is constructed from two distinct sources of information. First, the field-notes of the re-survey; and second, township maps as contained in published county atlases. The field-notes comprise only what is readily visible to a person traveling along the line. And of the things shown on the map, the field-notes only give their position at their intersection with the state boundary, while direction and character are given to the things shown by the aid of the published maps. The principal, if not the sole object of the map, is to define the position of the state boundary and its monuments with greater fullness and clearness than could well be done by verbal description. The boundary monuments are represented by a circle enclosing a triangle; the figures at the left denote the distance of each monument, south from the northern terminal monument.

CHAINING NOTES OF THE PENNSYLVANIA AND OHIO BOUNDARY
LINE RE-SURVEY OF 1881.

EXPLANATORY NOTE.—Distances are given in miles and feet, and are reckoned from the northern terminal monument, northward 2400 feet to Lake Erie, and southward 91 miles 4778 feet to the Ohio river. Distances from the terminal monument northward are denoted by the negative sign. Begin chaining at the water's edge of Lake Erie and measure southward on the state boundary.

Miles. Feet.

- 0. 2400. Water's edge of Lake Erie—lake shore bears true north 64° E. and S. 68° W.
- 0. 2340. Top of bluffs about 50 feet high, and of a uniform altitude. They are mostly free from stratified rock, and are being worn away by the waves about two feet per annum; ground rises slightly south.
- 0. 1945. (Approximate), monument of the original survey of 1786, and the terminal monument of that survey. It is a flagstone 6 inches thick, and 34×36 inches in size, and bearing on the east side the inscription, "Pennsylvania—1786." It was taken from the fence corner where it was first found lying in 1878, and re-set on the state boundary at the north side of the "lake road." For further description of this, and also of the other original monuments, see the Commissioners' report.
- 0. 1927. Center highway east and west, parallel with lake shore, and called "lake road." Highway on state line begins.
- 0. 0.0. Northern terminal monument. It is of granite, 6 feet high by 3 feet square at base. Its position is on the west side of highway, in level open country, and on the summit of a low broad undulation, lying parallel with lake shore.

On the north side of the shaft is the following inscription:

"ERECTED IN 1881 BY
A JOINT COMMISSION
APPOINTED BY THE
STATES OF PENNSYLVANIA
AND OHIO TO
RE-SURVEY AND RE-
MARK THE BOUNDARY
LINE AS ESTABLISHED
IN 1786."

On the east side of the base is inscribed—

"PENNSYLVANIA."

And on the west side—

"OHIO."

Miles Feet.

In the vertical axis line of monument, and on top of the sandstone foundation is inscribed a + (cross), one arm of which defines the state boundary and the other marks the beginning of the first mile.

The geographical position of the monument is—

Latitude, $41^{\circ} 58' 21''.48$.

Longitude, $80^{\circ} 31' 18''.17$ W.

Deduced by triangulation from "State Line Flag," a triangulation station on the U. S. Lake Survey. The position of "State Line Flag" is—

Latitude, $41^{\circ} 59' 23''.70$.

Longitude, $80^{\circ} 29' 14''.97$ W.

Was furnished by the Superintendent of the Lake Survey. All other geographic positions given in these chaining notes are derived from the northern terminal monument by measurement from the base line.

The direction, or bearing of the state boundary, is one and eighty-five hundredths ($1\frac{85}{100}$) feet per mile east of the true south, that is, it makes an angle of $0^{\circ} 1' 12''.27$ with the true meridian. It is a straight line as far as the terminus of the 32d mile. See description of state boundary, given at page —.

The magnetic variation is $2^{\circ} 44'$ W. as given November, 1878, by the transit used at the north end of the line.

Continue measuring southward.

- 0. 2140. Center highway leading E.
- 2900. N. margin valley.
- 3464. Turkey creek, 12 feet wide—flows W.
- 3500. Bottom bluff—ground rises S.
- 1. 0. Terminus 1st mile—in highway at W. side of road-bed—woodland W.—cleared land E.

October 22, 1881, set boundary monument two feet under ground, and marked on top with a cross (+). Index stands 25 feet *east* from the monument; it projects one foot above ground, and is marked as follows:
 north side, 1 M.; east side, P.; west side, 25 F.; south side, 1881; top of monument 2 feet 10 inches lower than top of index.

N. B.—Each boundary monument consists of two blocks of sandstone, the under-ground mark and the surface mark. The first block is called in these chaining notes the "Monument." The monument is $15 \times 15 \times 15$ inches in size, it is buried entirely under ground two feet below the surface, and its position is *on* the state boundary without exception. On the upper side is cut two notches intersecting each other at right-angles in the form of a cross. One notch points north and south and marks the state line; the other notch points east and west and marks the terminus of the mile.

The surface mark is called the "Index." It is $12 \times 12 \times 36$ inches in size, and set vertically on top of the monument, so that one foot of its upper end projects above ground, which is also cut to a uniform size of 12 inches square, the upper face being finished in a pyramidal apex one inch high. The four sides of the index face the four cardinal points.

Miles. Feet.

and each side bears an inscription—on the north side, the number of miles from the northern terminal monument, on the east side, the initial letter of Pennsylvania, on the west side the initial letter of Ohio, and on the south side the date of the re-survey, 1881. The upper face bears no inscription, but the center is indicated by the apex of the surmounting pyramid.

When, however, the index would stand in the way of public travel, it is not set *on* the monument, but stands twenty-five (25) feet either due east or due west from it. When such is the case the inscription 25 F. is cut on that side which faces the monument. 25 F. means that the distance from the center of the index to the state line is 25 feet. In setting the index, this distance was accurately determined, so that, as long as the index remains in place, the position of the state line may be found at any time without uncovering the buried monument.

Sometimes the terminus of a full mile did not offer a favorable spot for setting a monument, in which case it was carried forward or back to a suitable situation, and the inscription on the north face of the index modified to express the full miles and fractional parts of a mile.

1. 0. At 1st m. mnt. (first-mile monument) the ground rises S. 1 in 50 to tracks of Lake Shore and Michigan Southern Railroad—E. and W. nearly level—N. rolling. About 30 feet S. W. is head of a slight depression bearing N. W.—N. 210 feet is center of southernmost of a succession of small gullies coming from Pennsylvania, and running W. into larger gully in Ohio.

1. 0. Station for observing the meridian.

Lat, $41^{\circ} 57' 29''.8$.

590. Lake Shore and Michigan Southern Railroad.

2600. S. side swampy, woodland on W.

4615. Center highway called "Ridge Road," once called Buffalo and Cleveland road. Highway on state line ends.

4940. Center of dwelling-house, eastern corner of which stands across the state line.

2. 0. 2nd m. mnt.—in open fields E. and W. Soil sandy, underlaid with quicksand and water; mnt. bedded in a foundation of small boulders—index stands on mnt., and marked accordingly. Mound of earth, 18 inches high, 10 feet diameter.

Ground falls slightly S. into swampy woods—E. and W. level—N. rises 1 in 60 to "Ridge Road."

6. N. line of Loren Whiting land in Ohio.

800. Beginning of swampy woods. In fall of 1878, ground was half over flowed with straggling brooks.

2050. Brook 2 feet wide, outlet of swamp, drains W.

2150. End of woods W.

3000. End of woods E., and end of swamp or marshy ground.

4640. Highway W.—highway on state line begins.

NOTE.—A highway has been laid out on state line, but not yet opened for travel, from this point N. to the "Ridge Road."

Miles. Feet.

2. 4800. Line of sandy bluffs, about 10 feet high.
3. 0. 3rd m. mnt.—stands on W. side of highway—heavy woods E., thickest small timber W.
Index stands on mnt.—soil, dry, sandy loam and hardpan.
Ground nearly level all around. 350 feet N. is summit of low, sandy ridge or bluff, running parallel with lake shore.
1060. Center highway E. and W., called “Under-ridge road;” bottom of earthy bluffs, 40 to 50 feet high, and apparently at one time the shore line of Lake Erie; they bear about N. 70° E., and S. 70° W. Level, sandy country ends.
1250. Top of bluffs.
2950. Summit of ridge, 80 to 100 feet higher than level country bordering lake.
3400. Brook 8 feet wide, flowing E.—lies in deep valley.
5200. Alvah Culver’s house, 50 feet W. Mr. Culver is an old man upwards of 80 years of age; he has known the original monument standing a few rods south of his house since 1815, and certifies it to be in place.
4. 0. 4th m. mnt.—stands at W. side of highway—woodland E., open fields W. John Miles’ heirs land E. Alvah Culver’s land W. Index stands on mnt. and marked accordingly. Soil, dry and sandy, with clayey sub-soil.
Mnt. stands on flat summit, of an E. and W. ridge, which is rather the highest land between this point and the lake. Ground rises slightly S. for 160 feet, then falls 1 in 10 into a hollow, bearing westerly—undulating westward for one-half mile. N. 70° W. 300 feet is a divide at head of two hollows, one of which makes around to the N. E., crossing state line 640 feet N.—summit of ridge continues E. for 500 feet. Country is very uneven, being a succession of crooked ridges, with winding hollows between.
4. 0. Station for observing the meridian.
Lat., 41° 54′ 53.″3.
Magnetic variation, 3° 02′ W., Oct. 6, 1879, 10:15 A.M.
1. Original monument of 1786, now known as the “Culver Monument.” It is known to be in place, and is therefore one of the governing points in the restoration of the boundary. It is a rough, irregular granite boulder, two feet in longest dimension, and when first seen in 1878 was lying half buried in the ground, showing a large letter P on the south-easterly side. It is now straightened up, and stands directly against the south side of index of 4th mile mnt. Twenty-eight miles southward is the next remaining original mnt.
600. Bottom of hollow bearing westerly.
1045. Center highway E. and W., called “South-ridge road.” Highway on state line ends.
1180. Top of low E. and W. ridge.
1960. Top of precipitous gorge of Conneaut river.
2010. Bottom of bluff, and N. margin of river bottom bluff is 50 feet high or more; soft, crumbling shale in level strata.
2135. N. water’s edge Conneaut river—120 feet wide, flows westerly.

Miles. Feet.

2195. Center of river, also line between *Conneaut* and *Springfield* townships in Pennsylvania.
2290. S. Water's edge.
2640. S. margin river bottoms—base of bluffs.
2700. Top of bluff 50 ft. high—on a point.
2710. Land immediately falls again into crooked gully coming down from S.
3000. Brook 3 ft. wide—flows N. W. into river.
3050. On eastern spur of bluff.
3150. Line crosses brook before mentioned.
3300. Top of bluffs, margin of river valley.
4890. S. line of lands in Pennsylvania known as the "Moravian Grant."
5. 0. 5th m. mnt.—at S. margin of woods. Index stands on mnt.—mound of earth 18 inches high, 12 ft. diameter—location wet; soil sandy silt, washed down from surrounding higher ground. S. 30° E. up on the higher ground, begins a slight depression draining down past mnt., at which place the flat-bottomed hollow is very distinct, and continues on a short distance N. W. to its junction with the crooked gully, winding down northward along the State line.
1517. Boundary mnt. with index on mnt., and set and marked as usual, except the N. face of index, which is left blank, for it is a line mnt., and not intended to mark distance. It stands on the summit of a high E. and W. ridge, the water-shed between *Conneaut* river and *Ashtabula* creek. Miles 4 to 8 are all visible from this line mnt.
2078. Station for observing meridian.
Latitude, 41° 53' 40."6.
Mag. var., 2° 56' W., Oct. 5, 1879, 11:30 A. M.
2340. Center highway E. and W. called "state road." It is also line between *Conneaut* and *Monroe* townships in Ohio. Highway on state line begins. This place is called "State Line Corners." Ground falls gently S.
3200. Flat land begins.
3455. Center of branch of *Ashtabula* creek, 20 feet wide; flows westward. Stream is very sluggish and heads not far east in a swamp.
4798. Stone at farm-corners in Ohio.
6. 0. 6th m. mnt.—in highway at W. side of ditch; open fields all directions. Index stands on monument, and all marks accordingly. Soil, dry yellow loam and hard pan. Ground nearly level in all directions, but rises N. 5 feet in 450 feet to summit of swell running N. E. and S. W. North half of 6th mile occupied by ridge; S. half shallow valley.
725. Little run, drains W.
2270. Open level country E. and W.
3580. School-house E.
3712. Center highway E. called "Albion road."
5035. Center highway W.
7. 0. 7th m. mnt.—at W. side highway in W. fence, open fields all directions. Index stands on monument, and marked to correspond. Soil dry and loamy. Ground nearly level in all directions; no natural features for

Miles. Feet.

- reference. 7th mile, the land is very little rolling and rising slightly southward.
2425. Center highway W.
2460. Church at W. side highway (United Brethren).
3515. Run comes from swamp, flows W.
4300. About the summit of low gradual swell, rising slightly all the way from branch of Ashtabula creek.
8. 0. 8th m. mnt.—in highway in middle of wheel track, broad level fields all around. Monument is buried on the state line 2 feet under ground, and marked on top with a + (cross). Index stands 25 feet *east*, 1 foot above ground, 2 feet 6 inches above monument, and marked thus:

$$\begin{array}{c} O \\ \text{north side, 8 M.; east side, P.; west side, 25 F.; south side, 1881.} \end{array}$$
Location rather wet, soil black loam and stiff blue clay. Ground falls S. about 30 feet per mile, rises N. 3 feet in 500 feet to margin of slightly higher level. This point is visible from ridge at 5 miles 1517 feet.
2023. Stone at corner *Erie* and *Crawford* counties in Pennsylvania. It is a granite boulder 1 foot under ground in wheel track of highway, and is two feet *West* of the state line.
2400. Highway W.
3300. Little sluggish run, draining W.; ground very flat.
3950. Center highway E.
4922. Station for observing the meridian.
Latitude, $41^{\circ} 50' 36.''0$.
Mag. var., $2^{\circ} 35' W.$, Oct. 4, 1879, 10:15 A. M.
9. 0. 9th m. mnt.—at N. margin of heavy forest reaching southward $2\frac{1}{2}$ miles. Mile point is in middle of highway, but little traveled. Monument buried on state line 18 inches under present surface, and marked on top with the customary + (cross). Index stands 25 feet *West*, and is accordingly marked thus: north side, 9 M.; east side, 25 F.; west side, $\begin{array}{c} P \\ O \end{array}$; south side, 1881. Soil wet, vegetable mold overlying hard blue clay; country E. and W. very flat; N. rises 30 feet per mile, S. nearly level or trifle descending into swampy country.
300. Traveled highway ends, except a mere track in the woods.
3000. Dry knoll.
3300. Open track ends, thick brush and swampy land begins.
10. 0. 10th m. mnt.—in heavy forest. Monument 18 inches under ground; index stands 25 feet *East*, and marked in accordance with its position. Location very wet; soil black muck and blue clay. Ground level and swampy in all directions, but falling a few feet per mile southward.
2111. Stake at farm line in Pennsylvania.
2540. Center newly built, highway leading W.—road on state line begins.
2850. Center highway E.—road on state line ends—ditches of this highway are nearly full of water draining W.
3500. Ground rises slightly S. and becomes less wet.
11. 0. 11th m. mnt.—in thick beech and oak forest. The original vista is here plainly distinct. Monument buried on boundary; index stands 25 feet

Miles. Feet.

- East* and marked accordingly; soil wet, muck and slaty clay; ground level E. and W., falls N. 15 feet in one-half mile, rises S. about same; no definite features for reference.
11. 0. NOTE.—It is the intention of the resident citizens to build a highway along the State line, through this forest, hence the index of mnts. 10 and 11 were set to one side.
1350. End of forest; ground is passably dry, level open country toward the S.
1395. Center highway E. called "Beaver Center" road highway on State line begins.
2475. Brook 6 ft. wide—flows N. E.
2570. Center highway W.
12. 0. 12th m. mnt.—in highway, open fields all directions; mnt. 20 inches under surface of wheelway; index stands 25 feet *East* in road fence, and marked on W. face ^O 25 F.; other marks as usual; ground dry and loamy; land nearly level in all directions, lying in low undulations.
12. 0. Station for observing meridian.
Lat., 41° 47' 53."3.
Mag. var., 2° 28' W., Oct. 5, 1879, 5:15 p. m.
965. NOTE.—Old residents say that near this spot once stood an original monument, marked P on east side and O on west side. It was years ago taken away and used in the foundation of a neighboring barn in Pennsylvania.
1750. Brook 4 ft. wide, flows N. E.—land rises S.
2220. Line between *Monroe* and *Pierpont* townships in Ohio.
3250. Center highway E.
13. 0. 13th m. mnt.—in middle of highway, open fields all directions. Mnt. 20 inches under surface of wheelway; index stands 25 feet *east*, and marked correspondingly. Soil, dry, loam and slaty yellow clay. Land level E. and W.; falls N. 25 ft. to corner of *Monre* township; rises S. 1 in 100. No natural features for reference.
195. Center highway W.
2700. Summit. NOTE.—From 10m. 3000 ft. ground gradually rises southward to this summit. Were it not for intervening timber, the mnt. on ridge at "State Line Corners" would be visible.
4000. Center depression, drainage E.
14. 0. 13th m. mnt.—in middle of highway, open fields all directions. Mnt. is 20 inches under surface of wheelway; index stands 25 feet *East*, and marked on W. face ^O 25 F.; other marks as usual. Soil, wet, dark loam and clay. Land immediately at mnt. is flat and wet—1800 ft. E. is summit of low undulation. W. rises very slightly for 1500 ft. to a summit. N. rises gradually for $\frac{1}{2}$ mile to a swampy land.
- 1045 $\frac{3}{10}$. Stone in center of highway E. and W. called "Licking Street." Stone is 1 $\frac{3}{4}$ feet *East* of the State line. Highway on State line ends.
3315. State-line between *Beaver* and *Conneaut* townships in Pennsylvania. Land flat and wet.

Miles. Feet.

15. 0. 15th m. mnt.—in line fence, in woodland. Index stands on mnt.; all marks in accordance; soil, dry yellow loam and hardpan. E. and W. land level; N. fall 1 in 100; S. rises same. S. 10° W. 250 feet is head of a swail, which circles around to the E. (forming a semi-circle of dry land on which mnt. stands) and connecting with level swail land stretching away to the N. E.
 700. Summit of slight rise.
 2300. Center swail draining W.
 2550. S. margin woodland; ground rises S. in a gentle hill.
 5100. Center highway W. road on State line begins; road is wholly in Ohio.
16. 0. 16th m. mnt.—at E. side of highway, open fields all around. Index stands on mnt. Soil, dry sandy loam and clay. N. 70° E. 300 ft. is summit of a short oval ridge 10 ft. high. N. ground level for 200 ft. then falls 1 in 50. A semi-circle of level land projects W. 250 ft., then pitches down onto lower level. In western horizon, high land beyond Ashtabula creek is visible.
 270. Center highway E.
 1395. Small run, draining W.
 2135. Ground suddenly rises southward onto higher level.
17. 0. 17th m. mnt.—in highway at E. edge of road-bed, in open country. Index stands on mnt. and projects above ground 8 inches instead of one foot, as usual. All the marks of the mnt. are in accordance with the methods of marking set forth in note at first m. mnt. 900 ft. S. E. is summit of ridge 18 ft. higher than mnt., and running southwesterly and ending in gravelly hillocks $\frac{1}{4}$ mile in Ohio, and running north-easterly by an irregular line for a mile or more. Mnt. stands on a level spot on the north-western declivity of this ridge; ground continues to fall W. in gentle undulations into valley of Ashtabula creek.
 1286. Summit of ridge mentioned at 17m. This ridge is on the water-shed between the basin of lake Erie and the Ohio river valley. It is said to be underlaid with coarse yellow sandstone. The summit affords a view of 15 to 20 miles, and extending all around the horizon, except the N. E. ground falls rapidly S.
 1286. Station for observing the meridian.

Lat., 41° 43' 22."5.

Mag. var., 2° 07' W.—Oct. 1, 1879, 5:15 p. m.
 1740. Center highway E.
 1763. Maple tree 15 inches diameter, 3 ft. east of State line, said to have been planted over a stone mounment, long regarded by neighboring community as marking the State line, though not claimed to be an original mnt.
 3619. Center highway E. and W. Also line between *Pierpont* and *Richmond* townships in Ohio. Pennsylvania Line village $\frac{1}{4}$ mile E.
 4430. Spring run, drains S. W.
 5050. Spring run, draining S. W., flows into Ashtabula creek.

Miles. Feet.

18. 0. 18th m. mnt.—at E. side of highway; woods E., open land W. Index stands on mnt., rather wet black soil. Ground level N. for 250 ft., rises E. 20 ft. in 600 to summit of N. and S. ridge; S. ground level, falls W. 12 ft. in 300 to Spring run.
 1200. Level ground ends; land falls S.
 1540. Run, in depression 10 ft. deep, flows W.
 3440. Highway on State line ends; farm line in Ohio.
 3600. Line crosses little run flowing S. E.
 3825. Line crosses same run flowing S. W.
18. 4620. Boundary mnt. at end of seven-eighths mile, open fields E. and W. Mnt buried on State line and marked with the + (cross); index stands on mnt. and marked thus: N. face 18 $\frac{3}{4}$ M., E. face P., W face O., S. face 1881. Location dry, soil reddish loam, mingled with water-worn pebbles and gravel. 1500 feet N. E. is a high ridge, whence the land falls southwestwardly about 150 ft. per mile. It is composed of gravelly ridges, round and oblong knobs, on western shoulder of one of which knobs the mnt. stands.

NOTE.—The 19th mile point comes in a bog, therefore the mnt. is set back one-eighth mile, as described.

 4850. Farm line in Ohio.
 4900. N. margin of a shaking bog, covered with tamarack trees.
19. 0. End of 19th mile, in bog, no mnt.

NOTE.—This bog is elliptical in shape and contains about 65 acres, lying about equally in each State. It has two outlets, one draining W. into Ashtabula creek, and the other E. into Shenango river. Water shed between Lake Erie and Ohio river crosses the State line in this bog, tending to the S. W.

 835. Western outlet of bog.
 1500. S. margin of bog.
 2470. Center highway W., road on State line begins.
 2720. Center highway E.—road on State line ends.
 2845. Small stream 700 ft. E.—outlet of bog at 19 m.
20. 0. 20th m. mnt.—in fence line, in open fields at N. margin of woods. Index on mnt. and marked accordingly. Soil, dry loam and clay. 800 ft. N. W. is summit of ridge running S.W. and flattening down to low land 1000 ft. in Pennsylvania. South ground level, N. falls 1 in 10 to margin of bog. Watershed ridge visible in the N.

Mag. var., Dec 3., 1878.

 339. Farm line in Ohio.
 500. Land falls S.
 588. Farm line in Pennsylvania.
 1600. Brook 5 ft wide, flows E.
 2107. Farm line in Pennsylvania.
 2500. Swampy lands begins.
 4120. N. side slight rise in swamp, covered with a grove of hemlock.
 4600. Brook 7 ft. wide, flows E. into Shenango river.

Miles. Feet.

4723. Stake—line between *Conneaut* and *North Shenango* townships in Pennsylvania.
21. 0. 21st m. mnt.—in swampy woods all directions; mnt. 18 inches under ground with mound around index, which stands on mnt. and marked in accordance. Wet black muck and yellow clay; ground flat in all directions; 700 ft. N. E. edge of dry land.
625. Slight rise in swamp.
2030. On a slight rise in swamp and covered with heavy hemlock timber.
2140. Marshy brook, drains E.
2404. Top of ridge bearing S. E.—it is 10 ft. higher than surrounding swamp.
4600. S. margin of woods beginning at 20th mnt.
4820. Center highway E. and W., called "Padan Aram" road.
22. 0. 22d m. mnt. in open land, at east side of line fence. Index stands on mnt. and marked accordingly. Location dry; soil, red sandy loam intermixed with water-worn gravel and pebbles. Land level with a general southeastern drainage into Shenango river. Marshy in all directions, except irregular gravelly areas that rise 5 to 10 ft. above general level of swamp. Mnt. stands on such an area, whose summit is 5 ft. higher than mnt., and 250 ft S. W.; 230 ft. N. a depression crosses State line, draining swamp in N. W.
143. Station for observing meridian.
Lat., $41^{\circ} 39' 12''$ 9.
Mag. var. $1^{\circ} 58' W.$, Sept. 29, 1879, 12 m.
585. Swamp begins.
950. Middle of a dry island in swamp, containing two acres in Ohio and one in Pennsylvania. This island is thickly covered with a grove of huge hemlock. The "vista" made in 1786 through this grove is distinctly apparent. The "vista" is here about 35 ft. wide, and the State boundary lies in the middle of it.
- 1,000 NOTE.—Progress of survey arrested at this point Dec. 6, 1878. The "Shenango swamps" impassable at this date, extend southward 6 or 7 miles. Survey resumed Jan. 15, 1879.
1720. Mag. var., $1^{\circ} 53' W.$ Jan. 15, 1879, 9 A. M.
3000. Black ash timber.
3850. Dryer ground begins, 5 ft. above swamp.
4500. Summit of area of dry ground, covered with heavy hemlock forests.
23. 0. Terminus 23 mile in a boggy swamp. No monument set.
590. Beginning of slight rise.
23. 660. Terminus one-eighth mile—boundary mnt. set. Index stands on mnt. and marked thus: N. face 23½ M, E face P, W. face O, S. face 1881. Soil is gravelly sand changing to quicksand. Site of mnt. is 3 ft. above swamp; it stands on the N. margin of an area of dryer land projecting into Ohio from Pennsylvania.
2350. Dryer land ends, swamp begins.
5011. Ground rises 8 feet above swamp and becomes dryer.

Miles Feet.

24. 8. 24th m. mnt.—opening in forest on the W. Index stands on mnt., and marked accordingly. Mound of earth around index 1 ft. high, 12 ft. diameter. Surface dry but turning to quicksand. Mnt. stands on foundation of logs bedded in the quicksand.
90. Brook 3 ft. wide, comes from N. W. and drains sluggishly into Shenango river; such brooks or bayous go straggling through the country in all directions.
1700. N. W. end of low ridge.
1988. Corner of land in Ohio.
2780. Margin of Shenango river bottoms.
4500. End of wood.
25. 0. 25th m. mnt.—in Shenango river bottoms; usually overflowed. Index stands on mnt. and marked to correspond. Soil, muck, but mnt. rests on clay.
495. Station for observing the meridian.
Lat., $41^{\circ} 36' 32''$ N.
Mag. var., $1^{\circ} 30' W.$, Sept. 29, 1879, 7:15 P.M.
500. Center highway E. and W. Bridge over Shenango river, 400 feet E.
2875. N. bank Shenango river.
2985. S. bank Shenango river; river runs 100 feet into Ohio, and at—
3125. N. bank of river.
3190. S. bank of river; it runs 80 feet into Pennsylvania, and at—
3240. N. bank of river.
3280. N. bank of river, and flows S. W. into Ohio.
26. 0. 26th m. mnt.—in heavy woods, in line fence, and on E. side Shenango river. Index stands on mnt. and marked accordingly. Soil, dry, sandy clay. Mnt. stands about 500 feet from the river on the N. W. margin of a tongue-shaped swell of dry land, around which the river flows, on a 4-foot lower level.
500. Corner of farm in Pennsylvania.
890. N. bank Shenango river.
1110. S. bank Shenango river; flows S. E. into Pennsylvania. Land rises S. and becomes dryer.
4270. Pine grove; old vista well defined.
5150. Corner of land in Pennsylvania.
27. 0. 27th m. mnt.—ground boggy and unsuitable for sustaining mnt. None set.
27. 264. Terminus, one-twentieth mile, in line fence, forest in all directions. Set mnt. on line and two feet underground, marked on top with a + (cross); index stands on mnt. and marked thus: N. face $\frac{27}{264}$ M., E. face P, W. face O, S. face 1881. Soil, dry, clayey loam, stands on a slight rise in swamp.
384. Boggy brook, drains E.
610. (Apx.) line between *North Shenango* and *South Shenango* townships in Pennsylvania.
1575. Farm line in Pennsylvania, ground rises S.

Miles. Feet.

2560. Brook 6 feet wide, flows E.
3500. Woods end.
3700. Swampy brook, flows E.
3800. In clear land, open country, visible E. and W. Shenango river, 1,200 feet E., flows in a well defined valley.
4621. NOTE.—At this point the worst of the swamp is passed. Accordingly, on Jan. 21, 1879, work was suspended for the winter. Survey resumed April 1, 1879.
27. 4621. Station for observing the meridian.
Lat., $41^{\circ} 34' 07''.8$.
4820. Farm line in Ohio.
28. 0. 28th m. mnt.—in woods E. and W., stands in line fence. Index stands on mnt. and marked in accordance. Mound around index; soil, wet, stiff clay. Land swampy, and nearly level N. and S., rises W. 1 in 100 for a mile or more. Falls gently E. to Shenango river.
120. Brook 5 feet wide, drains E.
28. 420. Farm line in Ohio.
1308. Farm line in Ohio.
1500. Swampy run, flows E.
2264. Farm line in Ohio.
2560. Farm line in Ohio.
4280. First crossing of Mill creek, 12 feet wide.
4340. Second crossing of Mill creek.
4450. Third “ flows north-easterly.
4800. Land rises 10 feet, and becomes dry.
29. 0. 29th m. mnt.—in line fence—in woodland. Index stands on mnt. and marked to correspond. Soil, dry loam and clay. S. 40° E., 350 feet, is an elevation 5 feet higher than mnt., which is the the last of a series of little ridges coming in from S. E. From said summit, ground falls in all directions into swampy land. E., and also W., 150 feet is margin of swamp. Valley of Shenango river has become well defined, and the swamp lands are passed.
180. summit, ground falls slightly into wet land.
700. Highway E. and W.
3060. Farm line in Ohio—ground rises S.
4140. Dry, open country.
30. 0. 30th m. mnt.—in line fence—woods E., fields W. Index stands on mnt., marked in accordance. Soil, black loam and clay. N. ground level; W. rises 80 feet per mile; S. rises slightly; S. E. 300 feet; little alder swamp draining northerly, 100 feet E. of mnt.
366. Summit.
30. 906. Station for observing meridian.
Lat., $41^{\circ} 32' 08''.0$.
Mag. var., $1^{\circ} 32' W.$, Sept 25, 1879, 12:15 M.
970. Center of highway, E. and W.
1500. “French Run,” 10 feet wide, flows E.
2370. Brook 6 feet wide, flows E.

- Feet.
4000. Ashtabula & Franklin Railroad—runs N. E. and S. W.
31. 0. 31st m. mnt.—6 feet W.—of line fence—in open country. Index stands on mnt. and marked according to rule. Dry, black soil. Land N. and S. very nearly level for one-half mile each way. W. rises 50 feet per mile; E. falls same. No distinct natural features for reference.
1075. Farm line in Ohio.
1335. Run 3 feet wide, drains E.
1680. Center of highway, E. and W.
32. 0. 32nd m. mnt.—in line fence—open country. Nov. 21, 1881, set mnt. 2 feet under ground as usual, and marked on top with + (cross). Index stands on mnt. and marked thus: North face ^{32 M} ANGLE, east face P, west face O, south face 1881. Soil, dry, yellow loam and clay. Mnt. stands on N. W. slope of low ridge, whose summit is 800 feet S. 35° E. Land level for 300 feet E., then with a gradually increasing descent falls into Shenango valley. S. 10° W., 350 feet is head of depression, which gradually deepening, circles around 200 feet W., crossing state line 370 feet N., and continues N. E.
- NOTE.—At this mnt. occurs the first angle in the restored boundary, the angle being 6.25 seconds of arc. From the 32nd mile mnt. northward the bearing of the boundary is west of true north one and eighty-five hundredth feet per mile; from the same point southward, the bearing of the boundary is east of true south one and sixty-nine hundredth feet per mile
- The geographic position of 32d mile monument is—
- Latitude, 41° 30' 22."6.
- Longitude, 80° 31' 17."40 W.
348. Original monument of 1786, called "Brown Monument." Being in place it was made a governing point in the restoration of the "old line." It is an egg-shaped granite boulder about 3x4 feet in size, and weighing about 1½ tons, and is almost wholly above ground. It bears the original mark a large letter P. on the sloping east face.
600. Low summit.
1124. Farm line in Ohio.
1400. Farm line in Pennsylvania; land falls gently S.
2897. Line between *Ashtabula* and *Trumbull* counties in Ohio.
4730. Center highway E. and W.—small settlement at this place in Pennsylvania, called Royalton.
33. 0. 33rd m. mnt.—in line fence—open land all around. Index stands on mnt., marked thus: N. face 33 M, E. face P, W. face O, S. face 1881. Soil, dry loamy clay. Ground in all directions nearly level, sloping a little to the E.; mnt. stands 50 feet S. of summit of a slight swell in the ground projecting across state line from the W.
1365. Line between *Crawford* and *Mercer* counties in Pennsylvania. Ground falls slightly southward.
5080. Farm line in Pennsylvania.

- | Miles. | Feet. | |
|--------|-------|--|
| 34. | 0. | 34th m. mnt.—in wood-land. Index stands on mnt., marked according to rule. Soil, dry yellow loam and hardpan. Ground nearly level for one-half mile or more in all directions. In immediate vicinity of mnt. ground falls S. W. 1 in 100. No distinct natural features. |
| | 625. | Remains of large chestnut stumps on state line. Trees were probably cut in 1786. |
| | 700. | Farm line in Pennsylvania. |
| | 2170. | Farm line in Ohio. |
| | 2985. | Farm line in Pennsylvania—land rises S. |
| | 3170. | Farm line in Ohio. |
| | 3820. | Farm line in Ohio. |
| 35. | 0. | 35th m. mnt.—in line fence—in open land. Index on mnt., and marked accordingly. Soil, dry yellow loam. General slope of country from S. W. to N. E., about 80 feet per mile. Mnt. stands on north-eastern slope of a low undulation crossing line from S. W., and flattening out 400 feet N. E.; 300 feet N. a slight depression crosses line. |
| | 487. | Center highway E. and W. called "Kinsman Center" road; also called Meadville and Warren state road. Highway on state line begins.
NOTE.—An old settler living here, says that when he first came here, 51 years ago, the vista was plainly visible as far "as the eye could carry, and appeared to be exactly straight for miles in both directions." |
| | 1451. | Station for observing meridian.
Lat., 41° 27' 41."7. |
| | 2250. | Wet, flat land begins. |
| | 2470. | Farm line in Pennsylvania. |
| | 4700. | Flat land ends, land gradually rises S. |
| | 4812. | Farm line in Ohio. |
| 36. | 0. | 36th m. mnt.—at W. side of highway—wood-land W.; open fields E. Index stands on mnt., and marked on N. face 36 M, and other marks as usual. See note under first m. mnt. |
| | 105. | Center highway E.—leads to Jamestown, Pa. |
| | 2220. | Center highway W. |
| | 3127. | Line between <i>Greene</i> and <i>West Salem</i> townships in Pennsylvania. A beech tree, 26 inches in diameter, marks the township line. |
| | 3340. | Summit of gradual swell. |
| | 4552. | Center highway E. and W. |
| 37. | 0. | 37th m. mnt.—at west side of highway in open land. Index stands on mnt., and marked in accordance. Wet clayey soil. Mnt. stands on level summit of a tract of table land, which is nearly or quite as high as any between Pymatuning creek and Shenango river. Stands at the southern margin of an area slightly sunken, which drains through a little depression in the N. W. |
| | 1200. | Land falls southward. |
| | 1959. | Center highway E. and W., called "Mossmantown" road. Highway on state line ends. |
| | 2450. | Center brook 10 feet wide, flows west. |

Miles. Feet.

- 2888. High land, visible 10 to 15 miles west.
- 3826. Line between *Kinsman* and *Vernon* townships in Ohio.
- 4535. Farm line in Pennsylvania.
- 38. 0. 38th m. mnt.—7 feet west of line fence—woods W.—fields E. Index on mnt., with corresponding marks. Soil, dry and loamy. S. 70° W. 800 feet, land rises slightly to a summit said to be 350 feet above Shenango and Pymatuning valleys. Toward the E., W. and S. is a very extended view of a country entirely different from anything yet passed, the valleys being deeper and the hills much higher.
- 300. Summit 3 feet higher than mnt.; ground descends rapidly south.
- 1175. Center highway E.—road on state line begins.
- 1430. Center highway W.—road on state line ends.
- 3400. NOTE.—About 80 rods E. of this point is a quarry of sandstone, being first outcrop of sandstone seen on the line.
- 4323. Farm line in Ohio—low ground.
- 39. 0. 39th m. mnt.—in line fence—in wood-land. Index stands on mnt., and marked as usual. Dry, yellow loam and clay. Ground falls 1 in 30 from a point S. 30° E., towards N. 30° W. The wood-land at this place is a remnant of the primitive forest. Old vista is very distinct, the state line traversing the middle of it.
- 500. Farm line in Pennsylvania.
- 572. Center highway E. and W., called “Vernon” road.
- 944. Summit of a ridge, which sweeps around into Pennsylvania by irregular elevations, and joins the high promontory at 38 miles.
- 3020. Original monument of 1786, called “Clark Monument.” It is a granite boulder somewhat roughly hewed, being about 10x28 inches in size. Some 14 years ago it was taken up “to get it out of the way of a sled track”; about 3 or 4 years afterwards was reset “in the old hole” by adjoining landowners. It was moved 1½ feet W. and reset on the restored boundary.
- 3240. Brook 6 feet wide, flows E.
- 4340. Farm line in Ohio.
- 40. 0. 40th m. mnt.—in line fence; woods E., fields W. Index stands on mnt., marked according to rule. Dry, yellow loam. 1100 feet W. summit of ridge 20 feet higher than mnt., whence land slopes uniformly down past mnt. to Lowhead run.
- Ground rises S. 1 in 60.
- 1000. Ground level S.
- 1538. Highway E. and W. Road on State line begins.
- 3490. Little brook, flows E.
- 4280. Center highway W.
- 41. 0. 41st m. mnt.—in cleared land in highway near west side of road-bed. Mnt. 2 ft. under ground and 5 ft. 2 inches below top of index. Index stands twenty-five feet *east* and marked thus: N. face 41 M, W. face ⁰25 F., S. face 1881, E. face P.
- Mnt. stands on northeastern declivity of the high ridge separating the valleys of Booth run and Pymatuning creek. N. 30° E. 275 feet, is head of a gully making N. E. Land rises S.

Miles. Feet.

1777. Boundary mnt. on summit of Trautman hill. Index stand on mnt., and is marked on the N. side with the initials of the Boundary Commission; marks on other sides as usual. Trautman hill is a high promontory overlooking Pymatuning valley toward the S.
1779. Center highway E.
Station for observing meridian.
Lat., $41^{\circ} 22' 25''.4$.
Mag. var., $1^{\circ} 51' W.$, Sept. 21, 1879, 2:15 P.M.
2050. Beginning of descent. Beautiful view of valleys in the south-east.
2883. Hill slopes southward $4^{\circ} 58'$.
4275. Small brook, flows S. W. down over hillside.
42. 0. 42nd m. mnt.—at W. side of highway on the slope of Trautman hill; open fields E. and W. Index on mnt., marked accordingly. Soil, stony material brought down from higher parts of the hill.
66. White wood stump 20 feet W., cut several years ago, and showing distinct marks of a partial girdling about 90 grains from the surface.
75. Base of Trautman hill and margin of level land; base of hill bears $N. 60^{\circ} W.$ and $S. 60^{\circ} E.$
510. Center of highway E. and W.
43. 0. 43rd m. mnt.—in middle of highway; open fields E. and W. Mnt. 2 feet under surface of wheelway, 5 feet 7 inches below top of index. Index stands 25 feet *east*, and marked on W. face $25^{\circ} F$; other marks as usual. Dry, sandy soil. Land in all directions generally level, but covered with abrupt gravelly hillocks. Mnt. stands on W. end of such a hillock. N. 50 feet is margin of a little swamp in Pennsylvania, which drains around W. end of hillock, crossing state line 275 feet S.
75. Summit 4 feet higher than mnt.
1868. Street E. and W. Village of Orangeville begins.
2591. N. line McFarland Hotel.
2865. Middle of Pymatuning creek, 100 feet wide, flows S. E.
3200. End of level land; ground rises S.
3915. New York, Pennsylvania & Ohio Railroad; runs $N. 78^{\circ} E., S. 78^{\circ} W.$
4000. Steep hill begins.
44. 0. 44th m. mnt.—in middle of highway; open country in all directions. Mnt. under road-bed. Index stands 25 feet *east*, and marked thus: N. face 44 M, E. face P, W. face $25^{\circ} F$, S. face 1881. Ground nearly level E. and W. 8 feet N. is a sewer-pipe culvert, through which drains a little run going down over hill to the N. E., in which direction is an extended view of Pymatuning valley. Land rises gently S. to still higher levels.
Mag. var., $N. 1^{\circ} 56' W.$, Dec. 4, 1881, 11 A.M.
3500. Center highway E.
45. 0. 45th m. mnt.—in middle of highway in open country. Mnt. under middle of road-bed. Index stands 25 feet *east*, 7 feet higher than mnt., and marked on W. face $25^{\circ} F$; other marks as usual. Site of mnt. is on N.

Miles. Feet.

- slope of little valley, and about 10 feet below general level of country, which is nearly level in all directions.
Mag. var., $1^{\circ} 50' W.$, Dec. 4, 1881, 3 P.M.
185. Brook 6 feet wide, flows E.
2750. Center highway E. and W.
2790. Center highway leading S. E. to Sharpville, Pa.
3800. NOTE.—Original monument once stood at or near this place. In 1828 it was hauled away and built into the foundation of a barn. In 1881 the letter P was discovered engraved upon one side of it. It was a granite boulder, weighing $1\frac{1}{2}$ tons. Now lies in a pile of similar boulders lying 500 feet S. E.
4905. Brook 10 feet wide, flows east through a valley 20 feet below general level.
46. 0. 46th m. mnt.—at west side of highway in open country. Index stands on mnt., marked accordingly. Loamy soil. Monument stands at the general level of country on the summit of a ridge. Land, high, dry and level, sloping slightly eastward.
Mag. var., $1^{\circ} 56' W.$, Dec. 5, 1881, 11 A.M.
650. Run 3 feet wide, flows E.
2150. Run 2 feet wide, flows E.
47. 0. 47th m. mnt.—at W. side of highway in open country. Index stands on mnt., marked as usual. Location dry. Site of mnt. is on north-eastern declivity of ridge. Ground falls N. 1 in 30 for one-fourth mile, rises S. 1 in 30.
Mag. var., $1^{\circ} 51' W.$, Dec. 5, 1881, 4 P.M.
35. Center of highway west.
- 2717.4. Summit of ridge called Clark's hill. Boundary mnt. 2 feet under wheel-way. Index stands 25 feet *east*, and marked thus: E. face P, W. face ^O_{25 F} S. face 1881, N. face blank. Clark's hill and Trautman hill are inter-visible.
47. 2717.4. Station for observing meridian.
Lat., $41^{\circ} 17' 03''.1$.
Mag. var., $1^{\circ} 42' W.$, Sept. 17, 1879, 1 P.M.
4670. Center of highway E. and W.
48. 0. 48th m. mnt.—in middle highway under road-bed; in open country. Index stands 25 feet *east*, and marked accordingly. See note under 1st m. mnt. General slope of country from N. E. to S. W. Mnt. stands on S. slope of a gully 4 feet deep and 60 feet wide, heading in N. E. and bearing S. W. into a deep and ragged gully, called Big Run.
1105. Line between *Hartford* and *Brookfield* townships in Ohio.
1775. Brow of Big Run ravine.
2270. Big Run 15 feet wide; bends around into Pennsylvania 150 feet, and at—
2830. Crosses into Ohio 100 feet, and at—
3330. Recrosses into Pennsylvania, bearing S. E.
3200. Highway leaves state line, going S. E.

Miles. Feet.

3500. Foot of bluff 70 feet high. State line runs southward over spurs of this bluff, and at—
4166. Regains high ground.
4286. Brook 6 feet wide, flows S. E. in deep gully.
5100. N. brow of ravine 40 feet deep.
5260. S. brow of ravine.
49. 0. 49th m. mnt.—in line fence in open land on high hillside, 175 feet above Shenango river. Index stands on mnt., and marked accordingly. Site of mnt. is on S. E. brink of ravine 40 feet deep, bearing easterly into Big Run. Ground rises S. 1 in 15.
515. Run; flows E. in gully 25 feet deep.
1340. Sharp crest of bluff between two gullies bearing E.
2575. Run 3 feet wide, flows E.
3640. Village of Sharpsville, visible in valley to N. E.
3700. Run, flows E.
4560. Run, flows E.
4730. Center highway E. and W.
50. 0. 50th m. mnt.—in open country near summit of hills bounding Shenango river valley. Index stands on mnt., and marked in accordance. Its position is on N. slope of a little gully 6 feet deep and 50 feet wide, coming down from W. and turning to N. 60° E., going down over hillside.
1382. Center of street E. and W.
2525. Middle of wheel-house at the Curtis coal bank.
3610. City of Sharon is in full view, lying in the valley below to the E.
4983. N. line of State street.
5053. S. line of State street.
51. 0. 51st m. mnt.—in cleared ground overlooking city of Sharon. Dry stony soil. Index stands on mnt., marked accordingly. Mnt. stands on brow of "West Hill" about 40 feet below summit of same, and about 200 feet above Shenango river.
110. S. line of street leading E.
462. Station for observing meridian.
Lat., 41° 13' 56.''7.
- Mag. var., 1° 47' W., Oct. 24, 1879, 4 P.M.
1008. S. line street leading W.
1175. N. line street leading E.
1350. Street on state line ends.
2700. On flat ground; base of West Hill.
4300. Highway leading N. E.; road on state line begins.
4560. N. line highway E. and W.; road on state line ends.
4600. Brow of bluff.
4831. Railroad—Mahoning branch of N. Y., P. & O. R. R.
4847. N. bank of Shenango river.
5155. S. bank of Shenango river, flows S. W.
52. 0. 52nd m. mnt.—in Shenango river bottoms. Index stands on mnt.,

Miles. Feet.

- marked accordingly. Soil alluvial. Mnt. stands on E. side of river 120 feet from bank.
1025. River bank, 15 feet W.
1500. Left river bank.
1600. State line is in the river.
1660. Left bank, 10 feet W.
2100. Mouth of Yankee run 400 feet W.
2570. N. river bank.
2774. On bridge of Wheatland coal railroad.
2775. S. bank Shenango river, flows S. E.
3120. Middle of Little Yankee run, 30 feet wide, flows E.
3140. Top of bluff, 20 feet high.
3275. Center highway E. and W.; road on state line begins; base of "South Hill."
4500. Summit South Hill—about level with 51st m. mnt.
4855. Station for observing meridian.
- Lat., $41^{\circ} 12' 21''.1$.
- Mag.^o var., $1^{\circ} 38' W.$, Oct. 23, 1879, 10:30 A.M.
53. 0. 53rd m. mnt.—middle of highway in open country. Mnt. under middle of road-bed. Index stands 25 feet *east*, and marked according to regulation. Dry, loamy clay. Mnt. stands on S. W. declivity of a ridge whose crest is 600 feet N. E. Ground falls S.
- Mag. var., $1^{\circ} 49' W.$, Dec. 18, 1881, 8 A.M.
142. Line between *Brookfield* and *Hubbard* townships in Ohio.
1553. Center highway leading E. to Wheatland village.
3163. Summit at N. side of valley.
3450. Center highway W.
4500. Run, 2 feet wide, drains E.
4900. Brow of ravine.
5030. Brook 5 feet wide, flows E.
5200. Bottom of bluff 40 feet high; road crooks to the W.
5240. Top of bluff.
54. 0. 54th m. mnt.—at E. side of highway on W. slope of a knob, in open ground. Index stands on mnt., and bears the regular marks. Location dry. Knob on which mnt. stands forms part of the S. slope of an irregular valley with flat bottom and steep sides, 30 feet deep and 325 feet wide. A small lateral valley comes down from S., making around W. end of knob on which mnt. stands. Country rough and irregular.
80. Highway leaves state line, following around margin of the valley to the E., and at—
1860. Comes onto state line again on high ground.
2900. Outcrop of coal.
3240. Center highway W.
3595. High summit. "Clark's" hill visible at 47 miles 2,717 feet.
- NOTE.—On this summit once stood an original monument, now displaced. In 1878 a granite boulder was discovered 1 foot under ground, which

Miles. Feet.

- seemed to bear some artificial mark, but if it was the letter P it had been worn with wheels beyond recognition. The spot where the stone lay is, however, on the restored boundary.
55. 0. 55th m. mnt.—in open country, in W. ditch of highway. Index stands on mnt., and marked as usual, being also protected by a paving of boulders. Site of mnt. is on north-western slope of a gentle declivity, the contours of which sweep around in a circular arc towards the N., enclosing a shallow hollow draining N. E.
200. Highway leaves state line, bearing S. E.
1040. Center highway E. and W.
1800. Summit.
2000. Ground slopes gently S.
3740. Run, 2 feet wide, drains W.
4475. Extended view towards the W.
4790. Center highway E. and W.; leads westerly to Hubbard village.
56. 0. 56th m. mnt.—in N. E. corner of wood-land, 4 feet W. of line fence. Index stands on mnt., and bears the regular marks. Soil is dry and stony. Mnt. stands on north-eastern slopes of Little Deer creek valley. 100 feet S. W. ground falls off quite abruptly. Country rolling, with many steep declivities. Ground falls S.
1135. Farm line in Ohio, and also in Pennsylvania.
1410. A large white oak, which stood within the limits of the old "vista," was partially girdled in 1786, as is distinctly shown on the new rails lately made out of the tree.
3420. Little Deer creek, 15 feet wide, flows N. W.
5000. S. margin Little Deer creek bottoms; base of low bluffs.
5084. Highway; leads W. Road on state line begins.
57. 0. 57th m. mnt.—at W. side highway, in clear land. Index on mnt., and bears the regular marks. Dry, loamy soil. Mnt. stands on a level spot on top of the low bluffs that bound the south-western margin of Little Deer creek valley, and about 20 feet above the same. E., ground level for 30 feet, then falls away to level of bottoms. W., ground level for 20 feet, then rises in irregular undulations. S., rises gently to base of hill.
540. Center highway E. Road on state line ends.
900. Base of steep hill, jutting out eastward into Little Deer creek valley.
1350. Summit of steep hill; ground falls gently S.
2350. Center highway E. and W.
2840. Farm line in Pennsylvania.
3140. Little Deer creek, flows E.; lies in deep gully of tri-angular cross-section.
4120. Farm line in Pennsylvania.
4325. Line between *Trumbull* and *Mahoning* counties in Ohio.
58. 0. 58th m. mnt.—in dry, cleared land, and 15 feet W. of line fence. Stands on north-eastern declivity of a high swell 180 feet above Deer creek. Other similar hills or broad undulations are visible N. and E. 300 feet S. W. and 10 feet above mnt. is margin of high, level country in S., S. W. and W. Index stands on mnt., and is marked in the regular way.

Miles. Feet.

- 620. S. W. corner of original 400-acre tract in Pennsylvania.
- 1190. Brook 3 feet wide, flows E. in ravine 35 feet deep.
- 2182. Line between *Mercer* and *Lawrence* counties in Pennsylvania.
- 3557. Center highway N. W.; road on state line begins.
- 4025. Center highway W.
Stone—long regarded by many of residents in the vicinity as marking the state line; stands $1\frac{1}{4}$ feet *west* of restored boundary.
- 4175. Center highway E.
- 4570. Summit of low swell.
- 5139. Station for observing meridian.
Lat., $41^{\circ} 07' 04.''4$.
Mag. var., $1^{\circ} 47' W.$, Oct. 18, 1879, 4 P.M.
- 59. 0. 59th m. mnt.—at W. side of highway in open fields. Index stands on mnt., and all marks are in accordance. Dry, loamy soil. Ground level S. and E. for 800 feet; N. rises slightly about 1 in 50; W. rises a trifle, and continues level. Mnt. stands on a high plateau country, extending southward to the Mahoning river valley. Ranges of hills E. of the Shenango valley are visible. Highway leaves state line, leading S. E.
- 1300. Wet ground.
- 2940. Summit of low swell.
- 3965. Center highway W.
- 4000. Center highway E.
- 4235. Wet ground.
- 60. 0. 60th m. mnt.—in line fence, N. margin of wood-land. Dry, sandy soil. Index stands on mnt., and marked in accordance. S. $80^{\circ} W.$ 100 feet is the center of a circular swamp—hole 60 feet in diameter draining S. E. High plateau country between Mahoning and Shenango rivers.
- 1415. Point where an original monument stood 35 years ago; has since been removed, and is now in the foundation of a log-house near by.
- 1550. Center highway E. and W.; road on state line begins, but not now traveled.
- 3267. Summit of narrow ridge, on water-shed between Mahoning and Shenango rivers.
Mag. var. in 1786 was—
- 3950. Center highway E. and W; leads E. to New Bedford village, and W. to Youngstown, O.
- 61. 0. 61st m. mnt.—at W. side of highway, in open land. Index stands on mnt., and marked accordingly. Dry, loamy soil and stony clay. Mnt. stands on a level spot, extending 300 feet S. and 25 feet N., on the northern slope of a shallow basin inclosing headwaters of Coffee Run.
- 1060. Brook, 5 feet wide, flows E.
- 3460. S. margin of a broad, low depression.
- 62. 0. 62nd m. mnt.—in highway in open land; James D. Smith's land east; Wm. Shehy west. Set boundary monument Dec. 15, 1881; it is 2 feet under ground, the usual depth of all the mnts., and marked on upper face with a + (cross). Index stands 25 feet *west*, and marked thus: N. face

Miles. Feet.

⁶² M. ANGLE, E. face ^P ₂₅ F, W. face O, S. face 1881. Location, dry; yellow loam and clay soil. Its position is on a peninsula of land 8 to 10 feet above general level, and surrounded in all directions, except S. W., by lower land at a distance of 200 to 500 feet.

NOTE.—At this monument occurs the second angle in the restored boundary, the angle being sixty-six seconds of arc. From the 62nd m. mnt. the bearing of the boundary is west of the true north, one and sixty-nine hundredths feet per mile. From the same point southward the boundary is a true meridian. The geographic position of the 62nd m. mnt. is—

Lat., 41° 04' 27."4.

Long., 80° 31' 16."7 W.

325. Center highway E.

650. Center highway W.; road on state line ends.

900. Station for observing the meridian.

Lat., 41° 04' 18."5.

Mag. var., 1° 52' W., Oct. 20, 1879, 5:45 P.M.

1560. Original monument of 1786 now called "Shehy Monument." It is a roughly dressed sandstone, 10x16x35 inches in size. About 35 years ago the adjoining landowners removed it 100 feet south of its original position, and reset it on their common farm-corner, where it was standing in 1881. It was moved 9 inches *east* and reset on the restored boundary.

2330. Run, 2 feet wide, drains E.

3490. Center highway E. and W.

3840. Run, 2 feet wide, drains E.

4108. Line between *Coitsville* and *Poland* townships in Ohio.

63. 0. 63rd m. mnt.—wood land E., fields W. Index on mnt., and marked accordingly; rather wet, clay soil. Stands on high plateau between Mahoning and Shenango rivers, on the E. margin of slight depression, draining to N. E. through a narrow depression 300 feet N. Ground rises E. 5 feet in 150 feet to slight summit. S. rises 1 in 20.

685. Summit.

2220. Center highway E. and W., called "New Castle and Youngstown" road. Ground rises gently S.

4973. Summit.

64. 0. 64th m. mnt.—in line fence; wood-land W., open fields E. Index stands on mnt., and bears the regular marks. Ground level E. and W., and highest country in this region. Site of mnt. is on very outer brim or highest contour of Mahoning river valley, at nearly the same elevation as highest land on S. side of river.

550. Ground falls S. in rapid undulations.

1797. Fine view of Mahoning river gorge.

2000. Brow of rapid descent S.

3300. Dry, rocky lateral gully.

3944. (Approximate) mnt.—set to mark the line in the Mahoning river valley.

Miles. Feet.

- Index stands on mnt., and both are marked as usual, except that N. face of index is left blank. It stands at the N. side of highway, and at the base of the river hills, at a place where the land falls S. about 1 in 15, and about 20 feet above the river plain.
3960. Center highway following the river side.
4100. N. margin of river plain.
4418. Pittsburgh and Lake Erie Railroad—runs N. 81° W.
4725. Old Pennsylvania and Ohio canal, now abandoned.
4795. N. bank Mahoning river.
5108. S. bank Mahoning river, flows southeasterly; lies in a narrow valley about 300 feet below the general level of the country.
5127. Ashtabula and Pittsburgh Railroad.
5245. Margin of river plain—base of bluffs.
65. 0. Terminus of 65th mile; on the side of steep bluffs; no mnt. set; spot not suitable.
365. Top of first line of bluffs, 150 feet above river.
800. Top of second bluffs.
1760. Terminus of $\frac{1}{2}$ mile—in line fence; open fields. The 65th m. mnt. brought forward and set at this point. Index stands on mnt., and marked thus: N. face 65 $\frac{1}{2}$ M, E. face P, W. face O, S. face 1881. It stands on the S. slope of Mahoning river valley, on a moderately level bench in river hill, and about 60 feet below the summit.
1860. Center highway E. and W.
1890. Center highway leading S. E.
2671. Original monument of 1786, known as the "Barclay Mnt." It is undoubtedly in place, and is one of the governing points in the restoration of the "old line." The mnt. is a boulder lying nearly buried in the ground, about 20x30 inches in size, bearing a large and deeply engraved letter P, not on the E. side, as usual, but on top. State line passes through the letter. Site of mnt. is on summit of ridge at S. margin of Mahoning river valley, at about same elevation as mnt. 64.
2536. Station for observing meridian.
Lat., $41^{\circ} 01' 25''.8$.
4100. N. brow of ravine 25 feet deep.
4200. Bottom of bluff.
4235. "Goucher Run," 8 feet wide, flows E.
4320. Base bluff.
4700. Brow "Quaker Run" ravine.
4900. Center highway W.; road on state line begins.
5000. "Quaker Run," 12 feet wide, flows N. E.
66. 0. 66th m. mnt.—in highway at W. side of road-bed, in open country. Location, wet; soil, mucky and stony clay. Index stands 25 feet *west*, marked on E. side $_{25}^P$ F, other side of index marked as usual. Mnt. stands at S. side of "Quaker Run" valley, a little above the level of bottoms. S. ground rises in a concave slope to brow of ravine. A

Miles. Feet.

- crooked springy gully drains from a point S. 30° E. down past mt.
1400. Summit of swell.
1875. Center of a well close to state line; also, center highway E. and W.
67. 0. 67th m. mt.—in highway, middle of road-bed. Deep, dry, sandy loam. Index stands 25 feet *west*, and marked on E. face $25 \frac{P}{F}$; other marks as usual. Mt. stands in a high, level country, falling slightly S. E.; no natural features for reference.
480. Center highway E.
927. Mag var., 2° 05' W., May 6, 1879, 1:30 P. M.
1550. Run—drains E.
1895. Center highway W.
2080. Summit of low swell; hills N. of Mahoning river are visible.
2300. (Approximate) line between *Mahoning* and *North Beaver* townships in Pennsylvania.
4241. Low summit; highest point yet passed S. of Mahoning river.
4541. Southeast corner of *Western Reserve*, and also line between *Poland* and *Springfield* townships in Ohio. The surveyors of the Western Reserve marked this corner in 1796 with a large, square chestnut post. At present there is no visible corner. Latitude S. E. corner Western Reserve is:
Lat., 40° 59' 21."6.
5036. Farm line in Pennsylvania. Old settlers say there once stood an original monument at or near this point.
68. 0. 68th m. mt.—in highway, in middle of road-bed; open country in all directions. Location of mt. in dry, sandy loam and clay. High, level country, falling slightly to E. from mt. No natural features for reference. Index stands 25 feet *west*, and marked thus: N. face 68 M, E. face $25 \frac{P}{F}$, W. face O, S. face 1881.
2315. Corner of quarter section in Ohio.
4200. Center highway E.
4225. Brook, drains E
4510. (Approximate) corner of section in Ohio, and also center of highway W.
69. 0. 69th m. mt.—in highway, middle of road-bed, at S. margin of woodland, in dry soil and hardpan. Index stands 25 feet *east*, and marked thus: N. face 69 M, E. face P, W. face $25 \frac{O}{F}$, south 1881. General fall of land is to N. E. No natural features for reference.
772. Original monument—an extremely hard, irregular granite boulder, 12x 20 inches in size. It was not known to be a mt. until a few years ago, when it was dug up in repairing the public road; its mark was then discovered and the stone set back into its bed, but the letter was turned toward the *west*. The restored boundary passes through it.
1000. Branch of Hickory creek, 12 feet wide, flows E.
2700. Center highway E. and W.
3309. Summit.
Mag var., 2° 05' W., May 7, 1879, 9 A. M.
4550. Center highway W., called "Middletown" road.

- | Miles | Feet. | |
|-------|-------|--|
| | 4950. | Run, drains E. |
| 70. | 0. | 70th m. mnt.—in highway, in middle of roadbed; open land all directions; location in dry, sandy loam. Index stands 25 feet <i>east</i> , and marked on W. face $\frac{O}{25 F}$; other marks as usual. N. 335 ft. is junction of two depressions coming down from S. W. and N. W., which, after joining, continue southeasterly. Country is rolling, or rather is a series of inclines sloping 3 to 10 in 100. Mnt. stands on the northwestern slope of one of these inclines. |
| | 945. | Summit. |
| | 1220. | Center highway E. and W. |
| | 2440. | Brook 3 feet wide, flows E. |
| | 3460. | Summit. |
| | 3790. | Center highway E. |
| | 4585. | Center highway W. |
| | 4994. | Farm line in Pennsylvania. |
| 71. | 0. | 71st m. mnt.—in highway at W. side of road-bed, in pebbly clay soil; wood-land. Index stands 25 ft. <i>west</i> , and marked accordingly. See note under 1st m. mnt. Site of 71st mnt. is at the bottom of a broad concave valley, and where slight line of bluffs 2 or 3 feet high run N. W. |
| | 140. | A sluggish run, 2 feet wide, coming from N. W. |
| | 2023. | Summit of ridge—margin of valley, in which 71st m. mnt. stands. |
| 71. | 2023. | Original monument—on the summit just mentioned. It is a rough sandstone, 9x13x20 inches in size, bearing the original mark. It stood until recently in a wheelway, where it became much worn. About 1873 the hill was graded down, and the mnt. sunk under ground, being (as was supposed) vertically beneath its original position. It was not reset, the boundary passing through it. |
| 72. | 0. | 72nd m. mnt.—in highway, at E. edge of road-bed, in loamy clay; open land all around. Index stands 25 feet <i>west</i> , and marked thus: N. side 72 M, E. side $\frac{P}{25 F}$, W. side O, south 1881. Mnt. is two feet under ground, as usual, and the state line marked on its upper face with + (cross), as is the case with all the mnts., without exception. S. 450 feet and 20 feet higher than mnt., is the N. margin of a flat summit. Mnt. stands on a northern declivity, which sweeps around through the N. W. quadrant. |
| | 450. | Ground level S. |
| | 1400. | S. margin of summit. |
| | 2160. | Run in gully 10 feet deep, drains W. |
| | 2245. | Center highway E. and W., called "Petersburgh" road; highway on state line ends. |
| | 2850. | Run, flows W. in gully 30 feet deep. |
| | 3900. | Bottom of bluffs, margin of bottom lands. |
| | 4875. | Highway following valley of Honey creek. |
| | 5030. | Honey creek, 25 feet wide, flows S. E. into Beaver river. |
| 73. | 0. | 73rd m. mnt.—in cleared land, in Honey creek valley, at the S. W. margin of flood plain, and close to base of steep bluffs 20 feet high. Soil |

Miles. Feet.

- is black silt, underlaid with old creek bed. Index stands on mnt., and marked accordingly.
500. Run, 2 feet wide, flows E. Petersburg village $\frac{1}{2}$ mile directly W. on the hill above.
2060. Run, drains E.
3868. Original mnt. of 1786, standing at the W. side of a farm lane in high level country. It is a rough, natural block of rather soft sandstone, with part of the original mark broken off; is about 10x20x30 inches in size. Has the letter O roughly picked on W. side. It is not known to have ever been designedly moved, but being mostly above ground it has been knocked about some by rough usage. It was moved 14 inches west, and reset on state line.
3955. Line between *North Beaver* and *Little Beaver* townships in Pennsylvania.
73. 3958. Station for observing the meridian.
Lat., 40° 54' 14."3.
4300. Center highway N. W. and S. E.; road on state line begins.
4168. (Approximate) line between *Mahoning* and *Columbiana* counties in Ohio.
74. 0. 74th m. mnt.—in highway, in middle of road-bed, in rather wet, dark sandy clay. 3 feet N. a log culvert drains a swail, coming down from E. and flowing W. in a shallow depression, falling about 1 in 50. Ground level S. 100 feet, then rises abruptly 8 feet to a higher level. High country, and slightly rolling. Index stands 25 feet west of mnt., and marked accordingly.
100. Center highway E. and W.
1760. Summit of low swell.
1841. Original mnt.—a rather small, flat sandstone. It was taken up some 20 years ago in repairing the highway, and now lies under a fence corner at E. roadside. The spot where it stood could not be identified with any certainty.
3412. Center highway. E.
3655. Center highway W.; a brook 3 feet wide, drains S. E.
4084. N. margin of broad valley; ground descends in gentle slope S.
4725. (Approximate) section line in Ohio.
75. 0. 75th m. mnt.—in highway at E. side of road-bed, near S. margin of woodland. Index stands 25 feet west, and marked in accordance, i. e., E. face of index bears the inscription $\frac{P}{25 F}$. Site of mnt. is on the northern slope of "South Branch" creek valley. A little gully comes down from N., passing mnt. 80 feet E., and joined by similar straggling gully from E., and crossing state line 370 feet S. in a depression 10 feet deep.
2850. Bottom creek bluffs, 12 feet high.
3197. Center of bridge over "South Branch" of Little Beaver river; stream is 40 feet wide, flowing E. with a gentle current.
3900. Base low bluffs.
4775. (Approximate) section line in Ohio.
76. 0. 76th m. mnt.—at E. side highway, in wet, loamy soil; cleared land W., woodland E. Stands at N. W. side of a little swamp draining W. into

Miles. Feet.

- a brook coming down from S., and passing 125 feet W. of mnt. Country lies in small, sharp undulations, rising S. Index stands on mnt., and marked in accordance.
497. Summit of little sharp ridge.
1408. Center highway E. and W.
1527. Summit.
2471. Spot on which once stood an original monument. It is a flat-sided, irregular slab of sandstone, 7x14x20 inches in size. For years it has been lying flat in the roadway, and its character remained unknown until about 1876, when, on repairing the road, it was overturned and the mark discovered, and is now in possession of adjoining landowner. Spot where it was said to have lain is crossed by state line.
3385. Run, 2 feet wide, flows W.
4810. Stone corner of section in Ohio.
77. 0. 77th m. mnt.—in highway under middle of road-bed, in yellow, loamy clay; open timber E. and W. On summit of ridge, the highest land in this vicinity, whence the land falls gently N. and S. for $\frac{1}{2}$ mile or so. Very apex of ridge, 80 feet S. and 20 inches higher.
1445. Line between *Lawrence* and *Beaver* counties in Pennsylvania.
1930. Center highway E. and W.
2030. Run, 3 feet, flows S. E.
2200. Road on state line ends; leads S. W.
2600. Gully, goes E.
2898. Summit of irregular ridge, 40 feet high; country is becoming rough.
3450. Small gully.
4858. (Approximate) corner section in Ohio.
78. 0. 78th m. mnt.—at N. margin of wood-land, in yellow clay, and 19 feet west of line fence. Country is rather rough, lying in abrupt, rolling ridges. Mnt. stands on S. slope of such a ridge, where ground falls S. 1 in 30. Index stands on mnt., and marks are in accordance.
750. Swaily brook, in depression 40 feet deep.
985. Summit of ridge.
1400. N. margin of marshy swamp; called a "lagoon" by surveyors of 1786.
1580. S. side "lagoon."
1598. Pittsburgh, Fort Wayne and Chicago R. R.
1620. Refuse heaps "state line" coal works.
2825. Dumping chutes "state line" coal works.
3580. Mouth of "drift," 40 feet W.; ground rises S. in a steep hill.
3800. "Air shaft" 80 feet W.
4600. Summit of a N. and S. crest, about 200 feet above P., Ft. W. & C. R. R.
4941. Center highway E and W.
79. 0. 79th m. mnt.—in open land, 24 feet east of line fence Index on mnt., and marked thus: N face 79 M, east face P, west face O, south 1881. Mnt. stands on E. and N. slopes of a sort of cove in the hill, and at the head of a small drain going N. E. into a deep winding gully. Ground very steep E. and W. of mnt. Country is becoming very rough, being

Miles. Feet.

worn full of deep, narrow valleys, forming knobs and ridges 100 to 200 feet high.

387. Original monument of 1786, on sharp summit of a spur of ridge projecting E. It is a squarely-hewn slab of sandstone, 6 inches thick by 16x40 inches in size. On the east side is the inscription, $\frac{P}{77}$, meaning, evidently, 77 miles from the S. W. corner of Pennsylvania. At the base is a smaller stone, bearing the letters A. E. [Andrew Elicott]. This mnt. has been known for 50 years or more, but has not always been in place. It was once taken up "to make room for a threshing-machine," and was afterwards put back "within a few inches," as was supposed. It was moved *west* $3\frac{3}{10}$ feet, and reset on the restored boundary. The latitude of this original monument, as deduced from the "Northern Terminal Monument," is:

Lat., $40^{\circ} 49' 36''.5$.

Mag. var., $1^{\circ} 54'$ W., May 13, 1879, 9 A. M.

In a published work, entitled "Stone's Magnetic Variation," is a note which reads as follows: W. boundary Pennsylvania—N. lat., $40^{\circ} 50'$; var., $0^{\circ} 17'$ E.; date, 1786; authority, Andrew Elicott.

945. Station for observing the meridian.
 1640. Brow of gully.
 1700. Mouth of coal drift 40 feet W.
 1800. Bottom of gully; opens into an irregular ragged ravine 400 feet E.
 2720. Bottom gully.
 2943. Summit between two gullies.
 3420. Farm line in Ohio.
 3980. Brook, 3 feet wide, flows E. in deep ravine.
 4577. Near summit E. slope of knob 240 feet high.
 4890. (Approximate) line between *Unity* and *Middletown* townships in Ohio.
 5040. Brook, 2 feet wide, near head of a gully 50 feet deep.
 80. 0. 80th m. mnt.—Index stands on mnt., and marked: N. side 80 M, E. side P, W. side O, S. 1881. Country is very rough, being a succession of uneven ridges, with spurs projecting into the intervening ragged valleys. Mnt. stands on eastern shoulder of such a spur, 15 feet below summit. N. 60° W. 300 feet it is connected by a neck to a range of higher knobs. E. ground falls 50 in 100 feet to bottom of a gully.
 1000. Bottom of gulch 80 feet deep; opens E.
 1471. On crest of a spur projecting E.
 2400. Summit of ridge 250 feet above valleys on either side; open view along a deep valley lying southward.
 3200. Base of hill, ground level S.; highway N. E.; road on state line begins.
 3660. Run, 12 feet wide, flows S. 30° W.; heads just E. of 79 m. 387 feet.
 3840. Highway W.
 3950. Highway N. E.
 81. 0. 81st m. mnt.—in cleared land, in highway under road-bed. Index stands 25 feet *east*, and marked on *west* face, $\frac{O}{25 F}$; other marks as usual. Wet ground, underlaid with old creek-bed. Site of mnt. is at the E. margin

Miles. Feet.

- of a narrow N. and S. valley, with hills 200 feet high on either side, and at a spot where the stream, now passing, 70 feet wide, has cut a circular arc into base of east bluff 20 feet into Pennsylvania.
1870. Center highway E. and W.; road on state line ends.
2760. N. bank "Little Beaver" river, flows W.
2970. S. " " base of precipitous hill, 250 feet high.
3100. Top of precipice.
3788. N. edge flat summit.
4350. S. edge flat summit.
4670. Deep, concave hollow opening E.
82. 0. 82nd m. mnt.—in line fence, in wood-land on N. slope of "Booth" hill, at a place where it rises S. 1 in 10, and about 275 feet above Little Beaver river. Index stands on mnt., and all marks according to rule.
374. Summit of "Booth" hill, about 400 feet above river. On first reaching this summit the view is surprising and beautiful. The Virginia hills are visible. All around the horizon the country lies in heavy, rolling hills. Original mnt.—called "Booth" mnt. It is a squarely-dressed slab of sandstone, 7x15x40 inches in size, bearing the original mark. It has heretofore been leaning to the E.; it was straightened up, and stands on restored boundary. Ground falls S. into "Brush Run" valley.
1750. Lateral gully.
2930. Center highway E. and W.
4869. Section line in Ohio.
83. 0. 83rd m. mnt.—in line fence, in open land. Index on mnt., and marks accordingly. Stands in "Brush Run" valley at N. margin of bottoms, and close to the base of the bounding bluff, which at this point is 40 feet high, and bears S. 25° W.
750. Brush Run, 20 feet wide, flows W.
1200. S. margin bottoms; base "Bliss" hill.
2500. N. brow Bliss hill. Ground rises S. 1 in 15.
4280. Crest of Bliss hill; extreme summit 300 feet E.
4805. Section line in Ohio.
84. 0. 84th m. mnt.—in line fence, in open land. Index on mnt., and marks in accordance. Stands on S. slope Bliss hill, at a place where the ground falls S. 1 in 16.
160. Brow of steep rocky bluff on hillside.
550. Base Bliss hill; highways lead up valleys N. E. and N. W.; road on state line begins.
650. Run, 2 feet wide, drains E.
970. Run, 2 feet wide, drains E.
1550. Mouth coal mine E.
2280. Highway W., called "New Lisbon" road.
3000. Highway S. E.
3800. Brook, 3 feet wide, drains N. W. into "Sheepskin Hollow," a gloomy chasm leading down to Little Beaver river.
4180. Center highway W.; road on state line ends.

Miles. Feet.

4428. Station for observing meridian.
Latitude, $40^{\circ} 44' 35.''7$.
Mag. var., $1^{\circ} 39' W.$, Oct. 15, 1879, 5 P. M.
4740. Section line in Ohio; base of "Beatty" hill.
85. 0. 85th m. mnt.—in line fence; woods W., open fields E. Index on mnt., and marks in accordance. Monument stands on the north-eastern slope of a circular ridge ("Beatty hill"), beginning 800 feet N. W., and with a radius of 400 feet, circling around through the S. into the N. E., enclosing a hollow, out of whose sides seeps a little drain going out N. W. into "Sheepskin" hollow. Ground rises S. 1 in 5.
415. Summit of "Beatty" hill; probably highest land between E. Palestine and Ohio river. Original monument of 1786 occupying undisturbed its original position. It is a lens-shaped natural sandstone, 16x24 inches in size, and four inches thick, standing firm and upright in the hard, dry ground. It is a governing point in the restoration of the "old line."
460. Ground descends S. 1 in 12, and then follows southward on crest of a ridge.
3150. Top of bluff.
3280. Large spring at base of bluff; source of N. branch "Pine" run. Line lies southward in bottom of gorge, crossing the run several times, and reaching at—
4565. Base of E. hill bearing S. $30^{\circ} W.$
4800. (Approximate) line between *Middleton* and *St. Clair* townships in Ohio.
86. 0. 86th m. mnt.—in thick woods. The bottom stone of this monument is the solid rock, a soft sandstone, 18 inches under ground, and of the same slope as the surface. A level shelf, of ample size to receive the "index," was cut into the rock and the boundary marked with the usual +, cut into the solid rock. Index stands over the +, and is marked thus: N. face 86 M, E. face P, W. face O, S. 1881. Site of monument is on the steep western slope of hill lying between N. and E. branches of "Pine" run.
480. E. branch of "Pine" run, 10 feet wide, flows west, in a gulch 100 feet deep.
1186. Highway on state line begins.
1277. N. margin of summit nearly as high as "Beatty" hill.
2270. Original monument, a roughly dressed sandstone, 4x12x28 inches in size. About 30 years ago it was taken out maliciously and thrown down over hill to the W., where it was found in the woods and reset about a year afterwards, by a surveyor, since which time much of the top has been broken off. It was moved 3 inches *west*, and reset on the state line.
2270. Station for observing the meridian.
Lat., $40^{\circ} 43' 12.''7$.
Mag. var., $1^{\circ} 31' W.$, Oct. 15, 1879, 2 P.M.
2675. Center highway E. and W.; road on state line ends.
4750. Gully 60 feet deep, goes S. E. (Approximate) section line in Ohio.
87. 0. 87th m. mnt.—in line fence, in cleared land. Index stands on mnt.,

Miles. Feet.

- and marked in accordance. It stands on slope of hill falling S. E. into "Purgatory" hollow.
1090. Brink of Purgatory hollow, 200 feet deep.
1470. Run 10 feet wide, flows S. W.
1842. Crest of ridge projecting N. 65° W., between "Purgatory" and "Beeler's runs.
2964. N. brink Beeler run gorge.
3300. (Approximate) Beeler run, 15 feet wide, flows N. W.
3862. N. brow of table-land south of Beeler's run.
4312. N. margin of level land.
4651. Section line in Ohio.
88. 0. 88th m. mnt.—woods W., level fields E. Index on monument, and marked accordingly. Soil, red, sandy loam. High level country; ground slopes gently S.
2539. Station for observing the meridian.
Lat., 40° 41' 25."7.
2580. Center highway E. and W.
2665. Original monument, a rough sandstone, 7x17x34 inches in size, standing in a lane leading down to Island run. Had been knocked out of place somewhat by passing teams. It was moved nine inches *West*, and reset deeper in ground on restored boundary.
3000. Head of ravine 200 feet E.
3020. Line enters west side of a crooked gorge leading down to Island run.
4045. Slanting crest of spur pointing S. E.
4350. Small run in lateral gully opening S. E.
4588. Section line in Ohio.
4768. Slanting crest projecting E.
89. 0. 89th m. mnt.—in "Island Run" valley, in clear land. Index on monument, and marked in accordance. Monument stands on the steep side of Island run ravine. S. 60° E., about 300 feet, is the "run," where it makes a half-circle around the base of a peaked promontory three or four hundred feet high. N. 70° E. the ravine of the "run" is visible for one-half mile. Scores of oil derricks cover the valley and neighboring hill-sides.
550. Bottom of "Bear Wallow" gully; comes from N. W.
1931. Brink of precipice overlooking "Little Beaver" river 300 feet below.
2550. N. bank Beaver river.
2750. S. bank Little Beaver river, flows east.
3130. Old "Beaver and Sandy" canal, abandoned.
3200. S. margin of flood plain; the river sweeps around into Pennsylvania, and at—
4350. N. bank of river.
4760. S. bank of river, flows S. W.; line rises diagonally up the eastern hill.
5200. Highway, following the river.
90. 0. Terminus of 90th mile. No monument set; spot not deemed a suitable place, being a slip on the hill-side.

Miles. Feet.

933. End of rapid ascent; brow of river gorge; ground rises S. 1 in 15.
90. 1320. Terminus one-fourth mile, in woodland. Monument set. Index stands on monument, and marked thus: North face $\frac{90}{132} \frac{M}{O} F$, E. face P, W face O, south 1881. Mnt. stands east of Little Beaver river, and about 400 feet above the same at the upper margin of the valley. Ground rises gently E.
1495. Summit of slight lateral swell.
1900. Small lateral valley draining W.
2248. Original monument, slightly displaced by natural agencies; is a squarely-dressed sandstone slab, 7x18x48 inches in size, with the original mark deeply engraved. It was straightened up and re-set on the state line.
3200. Ground begins to fall S.
3525. Center highway E. and W.
4157. Brink of steep descent into Little Beaver valley.
4680. Center highway winding down hill-side.
4800. Coal opening, 100 feet W.
5100. Run, at base of hill; north margin of gravelly terrace.
91. 0. 91st mile point—comes in a deep hole gullied out of the river bank; not a suitable place for a monument.
91. 330. Terminus $\frac{1}{8}$ mile, in the Little Beaver river valley, at eastern margin of the river terrace, in a scattering grove of large white-oaks. Soil is mostly water-worn pebbles, the size of an orange and smaller. Index stands on mnt., and marked thus: N. face $\frac{91}{330} \frac{M}{F}$; other marks as usual. Mnt. stands in a bend in the river where it flows around a peninsula in the river terrace, and is 89 feet above ordinary water, and at the same elevation as the river terrace on the S. side of the Ohio river at Georgetown.
520. Center highway.
551. N. end of bridge over Little Beaver river.
691. S. end of bridge over Little Beaver river, flows S. E. into the Ohio river.
760. Center highway.
800. Farm corner—a square stone post.
800. Foot of bluff; river hill begins.
1842. Brow of river hill.
2140. Lateral gully, runs E.
2466. Original mnt., lying in fence-corner in 1879.
2560. Spot where above-mentioned original mnt. was reset on state line. It is an irregular piece of flagstone, 3 inches thick and 28x32 inches in size; stands on summit of river hills, the Ohio river valley being in full view below.
2590. Beginning of rapid descent.
3415. Center highway leading up out of valley.
3630. Cleveland and Pittsburgh Railroad; runs S. 67° W.
91. 3960. Terminus of $\frac{3}{4}$ mile. Southern terminal monument. The mnt. is of W. Quincy granite, and is a duplicate in every respect of the Northern terminal mnt. described at the beginning of these Notes. It is supported on a foundation of masonry built even with the ground surface. It

Miles. Feet.

stands in the Ohio river valley, at the base of a gravelly slope, and at the N. margin of the river plain.

The geographic position of Southern terminal mnt. is :

Lat., $40^{\circ} 38' 35''.1$.

Long., $80^{\circ} 31' 16''.7$ W.

91. 4567. Station for observing the meridian.

4650. North bank of the Ohio river.

Terminus of the Eastern Boundary of the State of Ohio.

The Boundary extends northwards on a true meridian as far as the terminus of the 62nd mile.

92. 0. Terminus 92nd mile, in the river.

1038. South river bank ; river flows westerly.

1355. Top of river terrace, 40 feet high.

1435. Original monument (at the base of the river hill) between Pennsylvania and W. Virginia, and on the same meridian as the restored boundary between Pennsylvania and Ohio. It is a well-hewn slab of sandstone, 8 inches thick, 18 inches wide, and standing 40 inches above ground ; marked on east side with the letter P, and on west side, V, and is standing in place. Initial point of original survey.

Respectfully submitted.

GEO. D. HERSEY,

Engineer for the Joint Commission.

APPENDIX.

[House Bill No. 298.]

AN ACT

In regard to the boundary monuments on the line between the states of Ohio and Pennsylvania. .

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio,* That as soon as practicable after the passage of this act, it shall be the duty of the governor to appoint three competent persons to be commissioned to act in conjunction with a similar commission of the state of Pennsylvania (but not otherwise) to examine as to the true location of the monuments which make the boundary line between the state of Ohio and the state of Pennsylvania, and in connection with said commission of the said state of Pennsylvania to replace any monuments that have been removed, or have become displaced or dilapidated, on the boundary line of said states.

SEC. 2. Said commission shall report to the governor an account of all expenditures arising under this act, together with a full report of their proceedings, accompanied with such maps and drafts as may be necessary to a clear understanding of the same, and the governor shall report the same to the first meeting of the general assembly thereafter.

SEC. 3. The sum of two thousand dollars, or so much thereof as may be necessary for carrying out the provisions of this act, is hereby appropriated out of any money not otherwise appropriated.

SEC. 4. That if any person shall remove said monuments or in any way disturb the same so replaced by said commission, shall upon conviction thereof, be fined in any sum not more than five hundred dollars, nor less than one hundred dollars, or imprisoned in the county jail not more than six months nor less than one month, or both, at the discretion of the court.

SEC. 5. This act shall take effect and be in force from and after its passage.

JAMES E. NEAL,

Speaker of the House of Representatives.

JABEZ W. FITCH,

President of the Senate.

Passed May 3, 1878.

[House Bill No. 794.]

AN ACT

Supplementary to an act entitled "an act in regard to the boundary monuments on the line between the states of Ohio and Pennsylvania." (O. L., vol. 75, p. 130.)

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio,* That in addition to the powers conferred and the duties imposed upon the commissioners appointed under said act, they shall have authority, and it is hereby made the duty of said commissioners, acting in connection with the commissioners appointed by the governor of Pennsylvania, to erect suitable monuments along the boundary line, when determined, sufficient to properly mark said boundary line: provided, where the boundary line is along any public highway, the commissioners shall place index monuments at recorded distances from the true line upon the side of said highway.

SEC. 2. This act shall take effect and be in force on and after its passage.

JAMES E. NEAL,

Speaker of the House of Representatives.

JABEZ W. FITCH,

President of the Senate.

Passed May 27, 1879.

[No. 100.]

AN ACT

In regard to the boundary monuments on the line between the state of Pennsylvania, and the states of Ohio and West Virginia, with an appropriation for expenses of same.

SECTION 1. *Be it enacted, etc.,* That soon as practicable after the passage of this act, it shall be the duty of the governor to appoint three persons, to be commissioned to act in conjunction with similar commissions of the states of Ohio and West Virginia to examine as to the true location of the monuments which mark the boundary lines between this state and the states of Ohio and West Virginia, and in connection with said commissions of the said states of Ohio and West Virginia to re-place any monuments which have become dilapidated or been removed on the boundary lines of said states.

SEC. 2. The sum of three thousand dollars, or so much thereof as may be necessary, is hereby appropriated for expenses of renewing and re-placing monuments and for contingent expenses.

SEC. 3. Said commission shall make report to the secretary of

internal affairs on the progress of the work, with an account of all expenditures, which shall be transmitted by said secretary to the general assembly at its next session; and said commission shall on completion of said work prepare and file in the department of internal affairs a full report of their proceedings, accompanied with such maps or drafts as may be necessary to a clear understanding of the same.

APPROVED—The 18th day of May, A. D. 1878.

J. F. HARTRANFT.

[No. 94.]

A SUPPLEMENT

To an act in regard to the boundary monuments on the line between the state of Pennsylvania and the states of Ohio and West Virginia, approved the eighteenth day of May, Anno Domini one thousand eight hundred and seventy-eight, appropriating money for the further carrying out of the provisions of said act.

WHEREAS, The sum of three thousand dollars, appropriated in the act of the eighteenth day of May, Anno Domini one thousand eight hundred and seventy-eight, has proved inadequate for the purpose to which it was applied;

And whereas, If the work be left in its present incomplete condition the amount already expended will be entirely lost;

And whereas, The estimation already made shows conclusively that a complete revision of said boundary is of great importance and is actually necessary; therefore,

SECTION 1. *Be it enacted, etc.*, That the further sum of eight thousand dollars, or so much thereof as may be necessary, is hereby appropriated for expenses of the continued placing and replacing of the monuments and for contingent expenses, as set forth in the act of May eighteenth, one thousand eight hundred and seventy-eight: *Provided*, That the sum of at least four thousand dollars, out of the amount appropriated in this act, be applied to the adjustment of the marking of the boundary line between Pennsylvania and West Virginia: *And provided, further*, That the state of West Virginia appropriate a like sum of four thousand dollars, to be applied to the adjustment of marking said boundary line between said states.

APPROVED—The 8th day of June, A. D. 1881.

HENRY M. HOYT.

REPORT

OF THE

OHIO BOARD OF THE OHIO AND PENNSYLVANIA JOINT BOUNDARY COMMISSION,

MADE TO THE GOVERNOR OF OHIO, PURSUANT TO ACT OF GENERAL
ASSEMBLY, APPROVED MAY 3, 1878.

YOUNGSTOWN, *January 15, 1879.*

To his Excellency, RICHARD M. BISHOP, Governor of Ohio:

SIR: We, the commissioners appointed "to act in conjunction with a similar commission of the state of Pennsylvania, to examine as to the true location of the monuments which make the boundary line between the state of Ohio and the state of Pennsylvania, and in connection with said commission of the state of Pennsylvania, to replace any monuments that have been removed, or have become displaced or dilapidated on the boundary line of said states," beg leave to report: That, on the 14th of October last, thirteen days subsequent to the date of our appointments, we met the Pennsylvania commission at the Monogahela House, in the city of Pittsburgh. Said Pennsylvania commission consists of Colonel James Worrall, of Harrisburgh; William W. Walker, of New Bedford, Lawrence county, and James McCullough, of Cannonsburg, Washington county. The joint board was organized by the appointment of Colonel James Worrall as chairman, and James Mackey as secretary. After some discussion as to the manner of prosecuting the survey, it was decided to meet on the 28th of that month at Smith's Ferry, near the southern terminus of the boundary line at the Ohio River, and if authentic, original monuments could be found on that end of the line to begin the survey there.

During the interval, Colonel Worrall was charged with the duty of making search for the field-notes of the original survey of Harrisburg. But as his search proved unavailing, and it was evident that more time would be needed to make examinations elsewhere, it was thought advisable to delay the meeting of the surveying party, and in the meantime to make examinations at each end of the line to ascertain which presented the best initial point for the survey. Messrs. W. W. Walker, J. M. Rickey and J. Mackey, who were detailed to do this work, reported in

favor of beginning the survey at Lake Erie for various reasons, some of which appear elsewhere in this report.

All efforts made to procure the original field-notes were ineffectual, though diligent search was made by different ones at every place where there was any probability of finding them. Search was made at Harrisburgh, Pennsylvania; at Richmond, Virginia; at Columbus, Ohio, and had been, as we were informed, previously made at the city of Washington. Through the kindness of Colonel Charles Whittlesey, of Cleveland, Ohio, we were cited to some brief reports of the original Pennsylvania commissioners found in the Pennsylvania archives, in the possession of the "Western Reserve Historical Society," at Cleveland, from which we gathered some important facts as to the dates of making the survey, the opening of a vista on the line, and the manner of marking the monuments. He also furnished us with a copy of his "Early History of Cleveland," which gives an interesting account of the re-survey of the northern portion of the line by the Western Reserve surveyors in 1796, ten years subsequent to the original survey.

State Auditor James Williams also furnished us with the re-survey of twenty-four miles of the southern portion of the line, made by the United States Government, in laying off what is known as the First Seven Ranges.

After our survey was commenced, Colonel Worrall furnished us with a copy of a fragment of a map which is supposed to have been made by the first commissioners appointed to run the line. It was deposited by Colonel Worrall in the Department of Internal Affairs at Harrisburg, on the 22d of July last, at the request of the Hon. William H. Jessup. This copy simply exhibits the streams of water, swamps and Indian paths crossed by the line, together with the mile points of the survey. It was doubtless intended to represent the entire west line of Pennsylvania, about one hundred and fifty-six miles in length, but lacks about six miles at the north end and seventy-four at the south end.

On the sixth of November last, the joint commission met in full board at the Central House, Conneaut, Ohio, and organized for the field-work of the survey, a full report of which will appear in the minutes kept by the secretary of the joint commission. Work in the field was immediately commenced. Owing to continuous cloudy weather for several nights, we were unable to make the proper astronomical observations from which to establish our meridian. But during the interval, in order to utilize time, the line was chained, its topography taken, and its monuments and land-marks noted for a distance of nine and one-half miles south from Lake Erie.

After having surveyed about twenty-two and one-half miles of said line, we were obliged to discontinue the work on account of a deep snow which fell on the 5th and 6th of the last month. We were just entering upon a large swamp, four to five miles in length, over which the state line passes, and which, we were informed by the inhabitants of that section, can rarely be passed through in the winter season, unless on the ice. We found the swamp very full of water, owing to the frequent heavy rains of last fall. The snow, which was sixteen inches in depth, made it utterly impracticable to prosecute our survey through it; besides covering up and making it difficult to find land-marks and monuments along the state line which we desired to see and note.

The commission engaged a man residing in that neighborhood to notify them whenever the swamp was sufficiently frozen over or the water drained out of it to proceed with the survey, when the work will be resumed. If our survey was only extended through this swamp, we know of nothing formidable to interfere with its continuous prosecution to the Ohio River. One of the objects which induced us to begin our survey at the lake, was to get through this swampy region before the fall rains made it impracticable; also to escape the deep snows and greater severity of the winter weather that usually prevail at the north end of the line. We were, however, overtaken by the very things we sought to avoid, notwithstanding we had proceeded with all reasonable dispatch to begin the work after receiving our appointments. If we fail to get through the swamp during this winter, we may be delayed with our survey till the latter part of the coming summer, at which time of the year the inhabitants say it is usually pretty well dried out.

The winter season is perhaps as favorable as any time of the year, if not too extremely cold, in which to make the survey. Although the days are shorter, yet as there is no foliage to contend with, we can get much longer ranges with our instruments in less time, and with much less cutting than in summer. It is the underbrush which, in many places, is quite dense, and second-growth timber which has sprung up in the vista cut out in the forest when the original survey of 1786 was made, that, more than anything else, aside from swampy districts, delays the field-work of the survey.

When we left off our survey we had gone over nearly one-fourth of the entire length of the line, which, from Lake Erie to the Ohio River, we understand to be about ninety-two miles. But in the twenty-two and one-half miles surveyed, we found only one standing, original monument; nor can we hear of any others for the next ten miles ahead. The reason, probably, that the line is so destitute of original monuments, is

because of the great scarcity of suitable stone, in that level country out of which to make them. It would be a very difficult matter even now, to find and convey with teams, stones for such a purpose. Much more difficult would it be at the time the line was originally surveyed, when this country was all a wilderness, to look them up and convey them, as the first surveying party were obliged to, without teams, to the points where needed. Although the first surveying party was directed to set up stone monuments every five miles on the line, yet it is quite evident that this was not done on the northern portion of the line, or if it was done, the stones were so small, and of such an indifferent character, that they were soon displaced by the action of the frost, and were disregarded. We expect to find monuments more frequent as we go south into the more hilly districts where they could be more conveniently obtained.

On that portion of the state line we have gone over, we find there has been much dispute among the owners of abutting lands as to its true location. So great has been the doubt and uncertainty about its correct location generally, there have been but very few land-marks of any kind set up along the line, notwithstanding there is a great multiplicity of adjoining farms in each state.

Some of these proprietors claim that the state line was originally located on the east side of the vista referred to as being made in the timber at the time of the original survey, and have set their fences accordingly. This vista seems to have been usually cut out about thirty feet in width, sometimes a few feet more, and sometimes a few feet less. Other proprietors claim that the line was on the west side of it, and still others that it was in its centre. Owing to this diversity of opinion, each one, when permitted, setting his fence to suit his views, a very irregular line of fence is presented, varying in some places as much as thirty feet with others.

We are much gratified to be able to say that so far as our survey has been prosecuted our meridian line has kept within said vista, and where we left off it did not, perhaps, vary two feet from its centre. We are in hopes that on the remainder of the line there will be no material divergence between our meridian and the one originally run.

It is quite evident that there was a great necessity for a re-survey of the line; and when re-surveyed, it should be permanently and thoroughly marked. This we do not consider the act authorizing the re-survey sufficiently provided for. The act stipulates that we are, in connection with the Pennsylvania commission, "to replace any monuments that have been removed, or have become displaced or dilapidated, on

the boundary line of said state.” Following the strict construction of this provision of the act, we do not see how we would have the right to replace any monuments on the line as far as we have run it, unless it would be at Lake Erie, which is simply a thin, irregular shaped flag-stone, say six inches thick, three feet long, and about two feet and ten inches broad, with the inscription upon it “*Pennsylvania, 1786.*” This monument is said, by parties now owning the abutting lands at this place, in the respective states, to have been washed down about twenty years ago by the encroachments of the lake, and was drawn up by them and placed in a fence corner where it now lies. A rumor prevails that it once stood on the beach of the lake and has been shifted back southward several times. This monument, though doubtless the best that under the circumstances could be conveniently obtained, is not such a one as should be set at the present time on any part of the line, much less as a terminal monument.

Such monuments are so easily shifted by the frost or by hand that doubts on these accounts are very likely to arise—and we are informed in some instances have risen along the line—as to their original location. The standing monument already referred to—which, with the one lying at the lake, are the only ones discovered for a distance of twenty-two and one-half miles, or heard of for thirty miles—is simply a granite boulder, marked with the letter “P” on its east side, according to the general plan of making the state line monuments, and is so light as to be readily shifted by the hand. This monument, situated about four and one-half miles from the lake, is the one over which our present meridian line passes, and, from what we can learn, is a pretty fair sample of the monuments generally to be found on the southern portion of the line. If this be true, the line could never be permanently marked, and thoroughly marked, simply by replacing them as first set, though they were set every half mile of the entire length of the line.

Now, as the law simply requires us “to replace any monuments that have been removed, or have become displaced or dilapidated,” we might ask, where we were unable to find any monuments for a distance of twenty-five or thirty miles, and had no evidence that any had ever been set, how we could add any new monuments, or what great benefit would result from the resurvey of such portions of the line?

It certainly was not the intention of our legislature to incur the expense of resurveying the line without properly remaking it; and in order to make provision for this necessity, we have suggested some amendments to the law, which are herewith most respectfully submitted to that honorable body.

L. OF C.

The commission has had some conference with the Pennsylvania commission as to the number and character of the monuments to be erected on the line. It is deemed advisable to set them generally one mile apart; making those at five mile points superior in size and form to intermediate ones; and the two terminal monuments of a still superior character, in order to secure permanency and durability. It is also deemed advisable to obtain all said monuments, unless it would be the two terminal ones, from some of the large stone quarries in north-eastern Ohio—of which there are several—and have them shipped by railroad to the points the most convenient to where they will be needed, and thence to be conveyed by teams to their locations along the line. Railroad facilities in the neighborhood of the line are so great as to make this a comparatively easy matter.

A considerable portion of the state line has public roads upon it, and in course of time the greater part of it will be occupied in this way. We cannot safely place monuments in a public highway; and, therefore, in our amendments to the existing law, we have provided for the protection of index monuments that may be placed at recorded distances from the true line, on the sides of roads.

We are obliged to ask for an additional appropriation of twenty-five hundred dollars, not only for the purpose of properly remarking the line when surveyed, but for the purpose of completing the survey to the Ohio river. It was impossible for the legislature to determine in the outset the extent of the appropriation necessary to finish the work. It is impossible for this commission, even now with its present experience, to decide with much assurance as to its probable cost, so many are the obstacles and contingencies likely to arise in a survey of this kind. The additional sum asked for is based upon a careful and detailed estimate, and while we are in hopes that with economy it will not be required, yet we feel that we would not be safe with any less appropriation.

We feel it to be our duty to urge upon our legislature the necessity of making the appropriation desired as promptly as it can reasonably be done. The marking of the line with suitable monuments ought not long to be delayed after the survey is completed.

The mile points are well marked with reference stakes, but though carefully done, this marking is but temporary, as these stakes are at all times liable to be shifted or destroyed inadvertently or maliciously, and in certain kinds of soil they are quite apt to be displaced by the operations of frost. The setting of the monuments should not be delayed beyond the coming fall.

It is now evident that as one-half of the first appropriation is already expended, the remainder is not sufficient to extend the survey to the Ohio river. It would be quite unfortunate if we should shortly be able to resume the survey, and after extending it to within ten or fifteen miles of its southern terminus, we should be obliged to disband our surveying party for want of funds. Therefore, as a matter of economy to the state, we felt warranted in urging the prompt attention of our legislature to the proposed amendments to the law under which we act.

We are, sir, very respectfully, your obedient servants,

J. M. RICKEY,
H. B. PERKINS,
JAMES MACKEY,
Commissioners.

FINAL REPORT.

COLUMBUS, OHIO, *March 31, 1883.*

To His Excellency, CHARLES FOSTER, Governor of Ohio :

SIR: The commission appointed by your predecessor in office, Governor Bishop, created by a law of this State to act in conjunction with a like commission on the part of Pennsylvania, to re-survey and re-mark the boundary line between the State of Ohio and the State of Pennsylvania, are now enabled to present you our second and final report.

Although we encountered many unavoidable delays and difficulties in the prosecution of the work intrusted to us, yet we are gratified to be able to state that, so far as we can ascertain, our work has met with acceptance at the hands of the inhabitants living along the line in either State, and we trust it will also receive your approval.

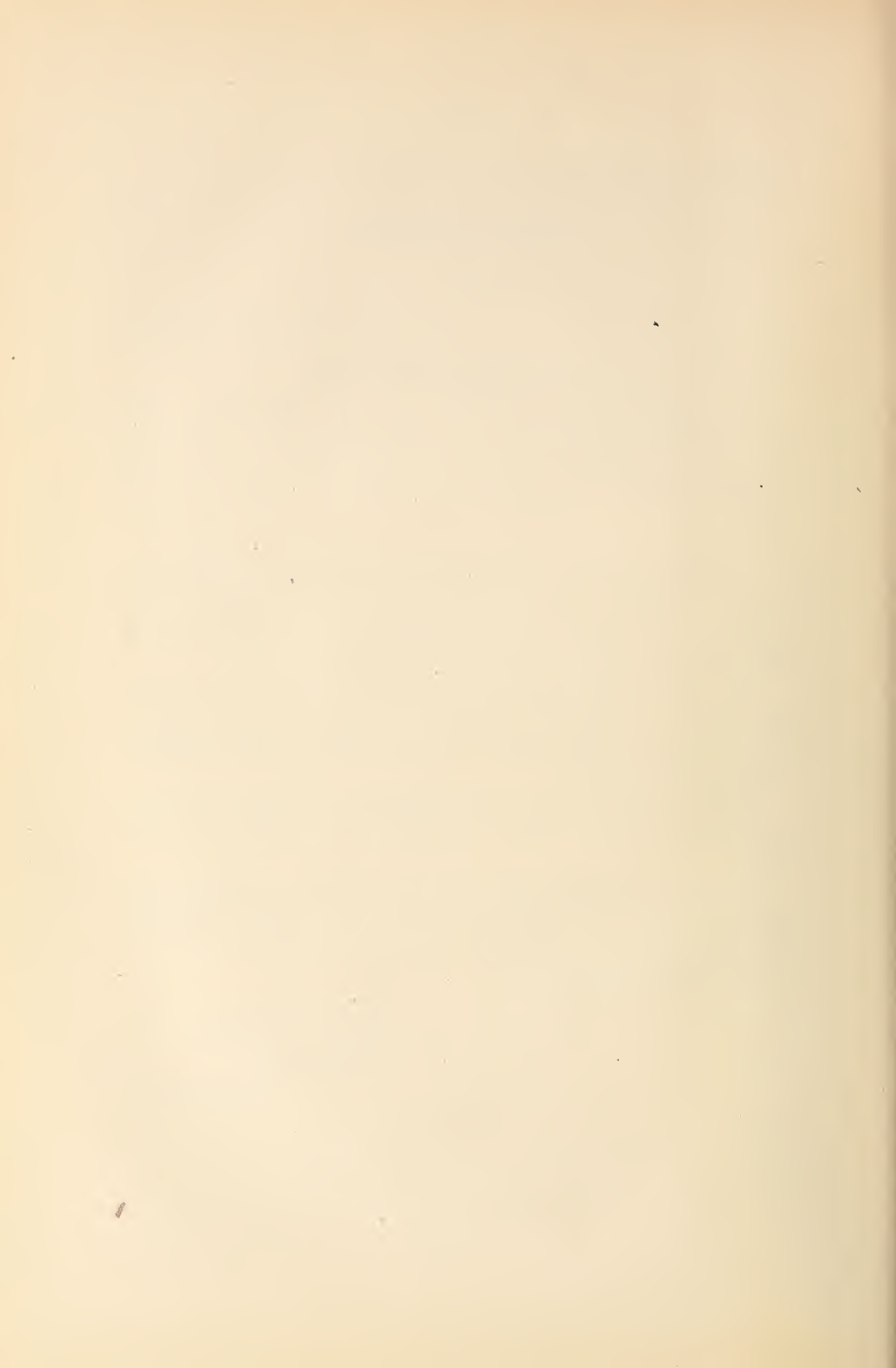
For a full description of the work done we have the honor to submit herewith the Report of the Joint Commission as well as a map of the line and field notes in detail, made by George D. Hersey, Engineer for the Joint Commission.

For your convenience we also herewith hand you a copy of the laws of each State creating the two commissions, and a copy of our first report.

Also you will please find a financial statement of the appropriations received and disbursements made, showing a balance unexpended of \$302.20, which is covered by the check of our treasurer, payable to your order and herewith enclosed.

Respectfully submitted.

JOSEPH M. RICKEY,
HENRY B. PERKINS,
JAMES MACKEY,
Commissioners.



Map of the Boundary line between the States of Pennsylvania and Ohio, showing said Line as Re-surveyed and Re-marked A.D. 1881 by a Joint Commission appointed by said States to Restore the original Boundary as established in 1786: said commission consisting of James Worrall Wm W. Walker and James M^c Cullough on the part of Pennsylvania, and on the part of Ohio of Joseph M. Rickey, James Mackey and Henry B. Perkins.

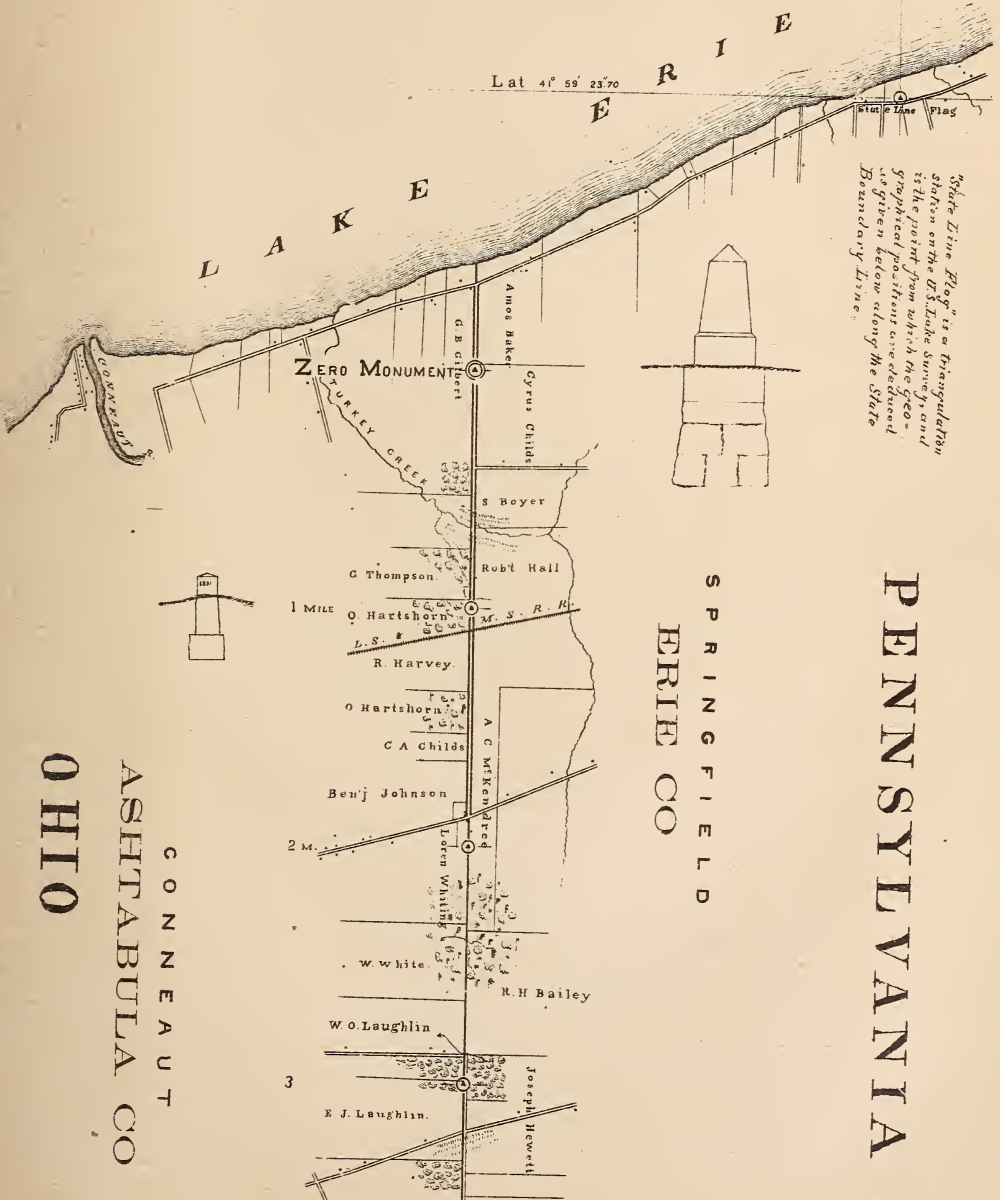
Geo. B. Hersey

Engineer for the Commission

Long No 23 1437

Lat 41° 59' 23.70

"State Line Flag" is a triangulation station on the U.S. Lake Survey, and is the point from which the geodetic graphical position were determined as given below along the State Boundary Line.



PENNSYLVANIA

SPRINGFIELD
ERIE CO

CONNECTICUT

ASHTABULA CO

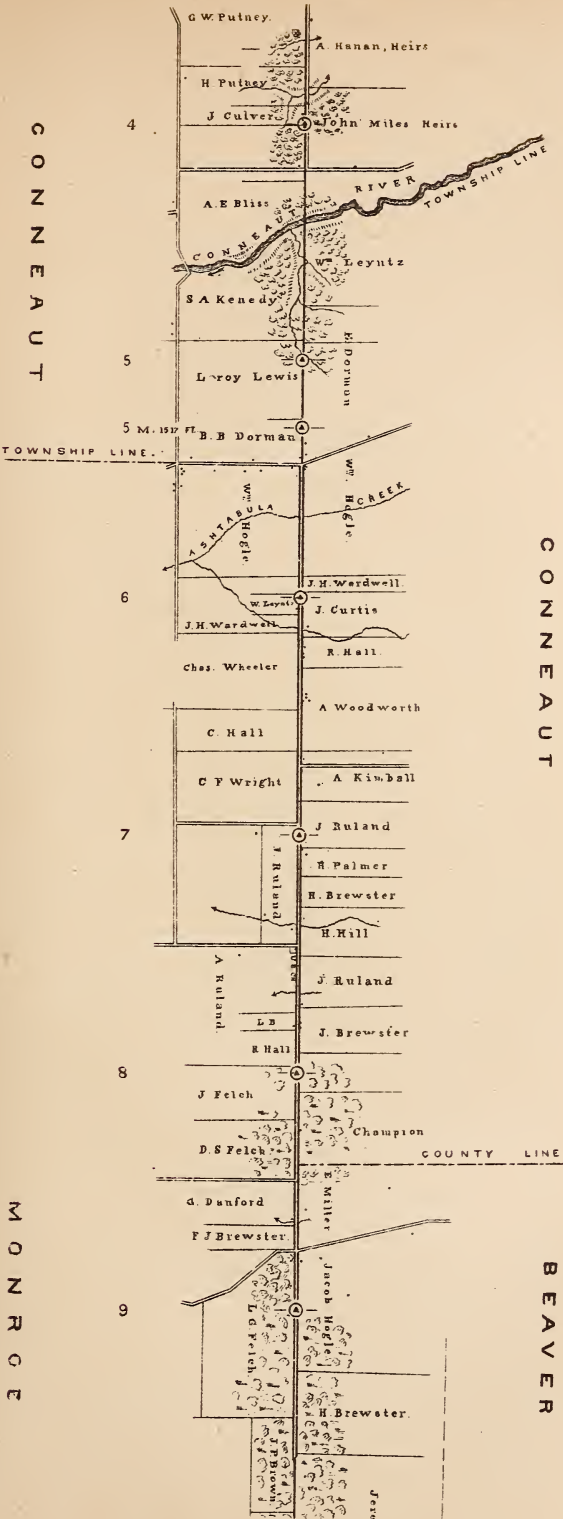
OHIO

ERIE CO.

CRAWFORD CO.

CONNEAUT

BEAVER



ASHTABULA CO.

CONNEAUT

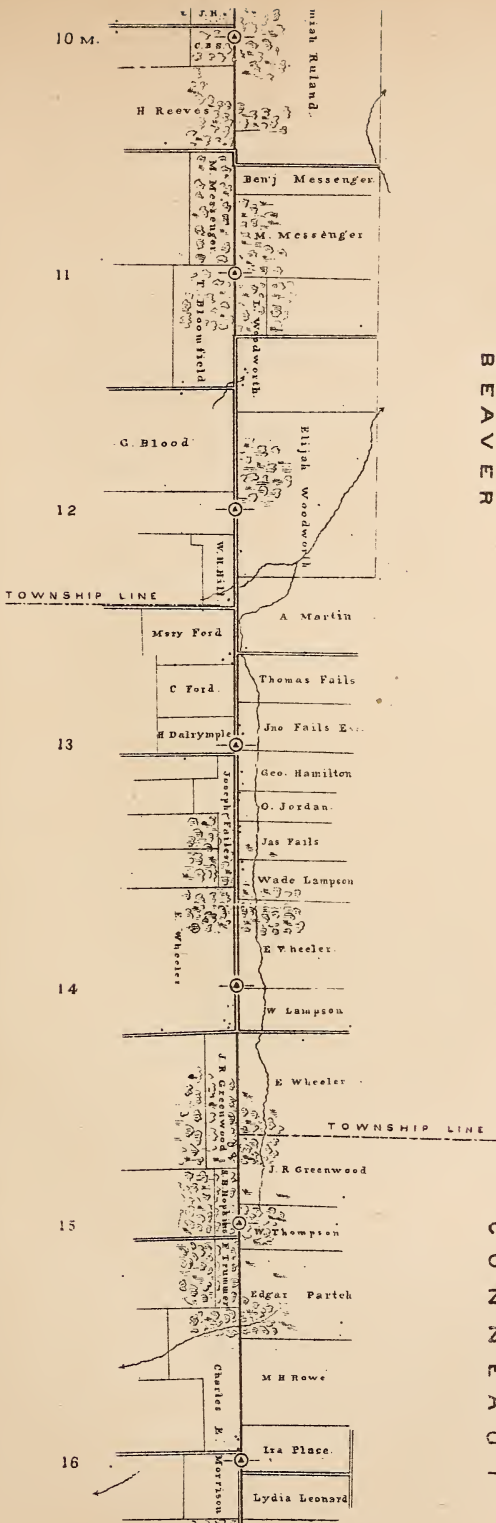
MONROE



CRAWFORD CO.

BEAVER

CONNELT



MONROE

PIERPONT

ASHTABULA CO.



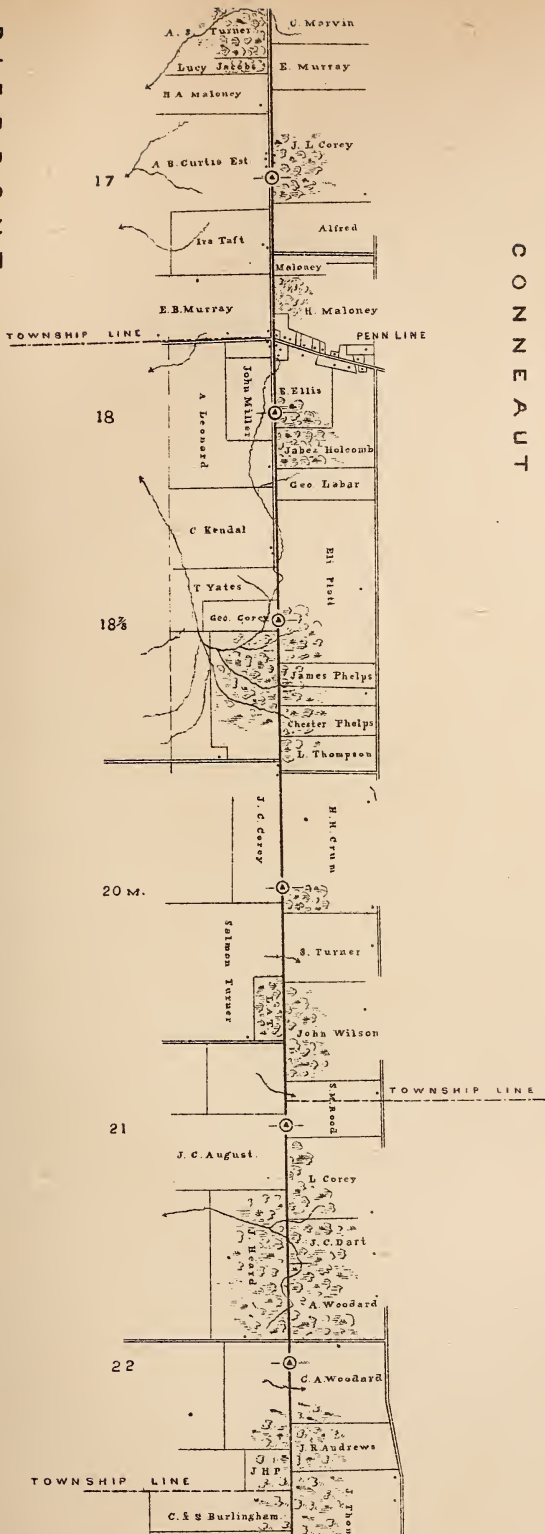
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CONNEAUT

PIERPONT

RICHMOND

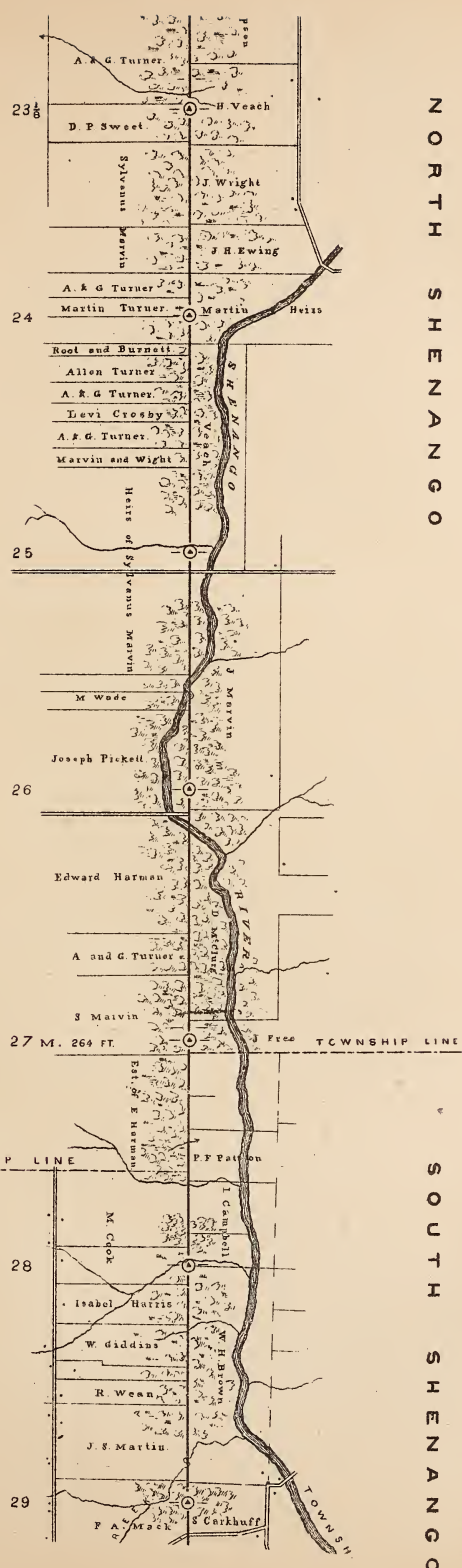
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CRAWFORD CO.

NORTH SHENANGO

SOUTH SHENANGO



ANDOVER

ASHTABULA CO.

WILLIAMSFIELD

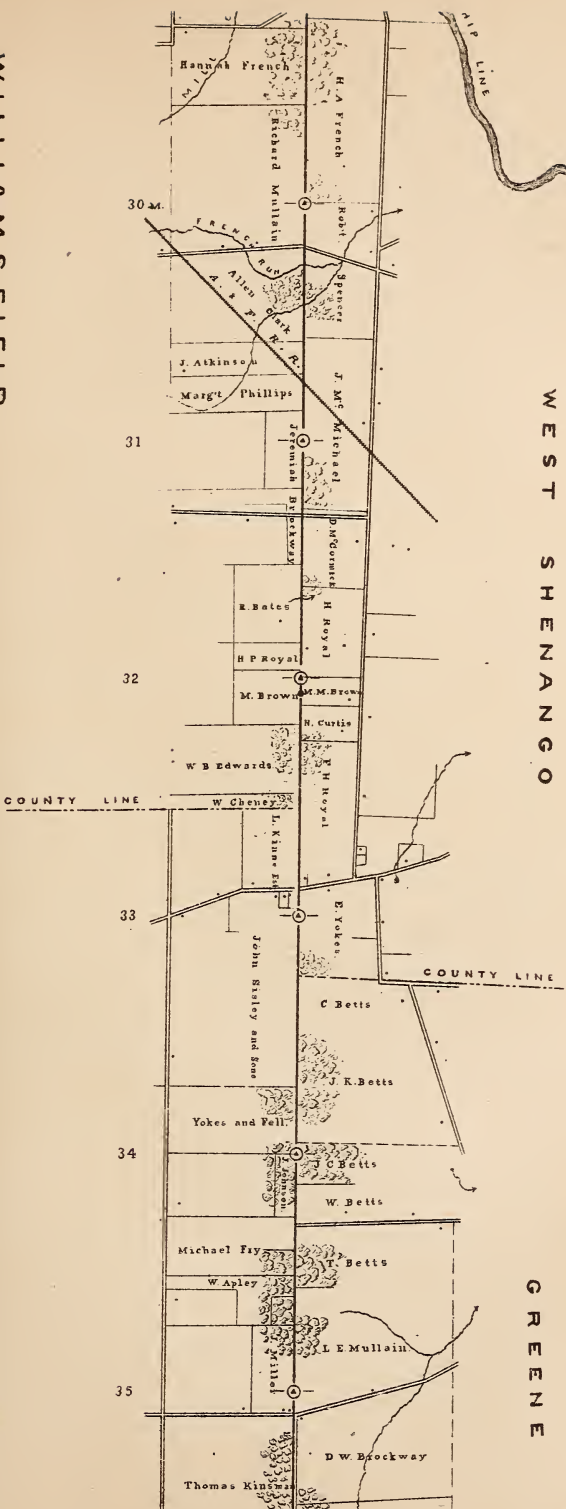
CRAWFORD CO.

WEST SHENANGO

38 Miles. Angle in State-lens
 Angle is 6.25 seconds of arc
 Bearing of Sub-line is
 West of true North 185 feet per mile
 East " " South 1.68 " " " " " "
 as for the terminus of 62nd Mile.
 Lat. of 32nd Mch. - 41° 30' 22.6"
 Long. " " " 80° 31' 17.40" W

MERCER CO.

GREENE



WILLIAMS FIELD

KINSMAN

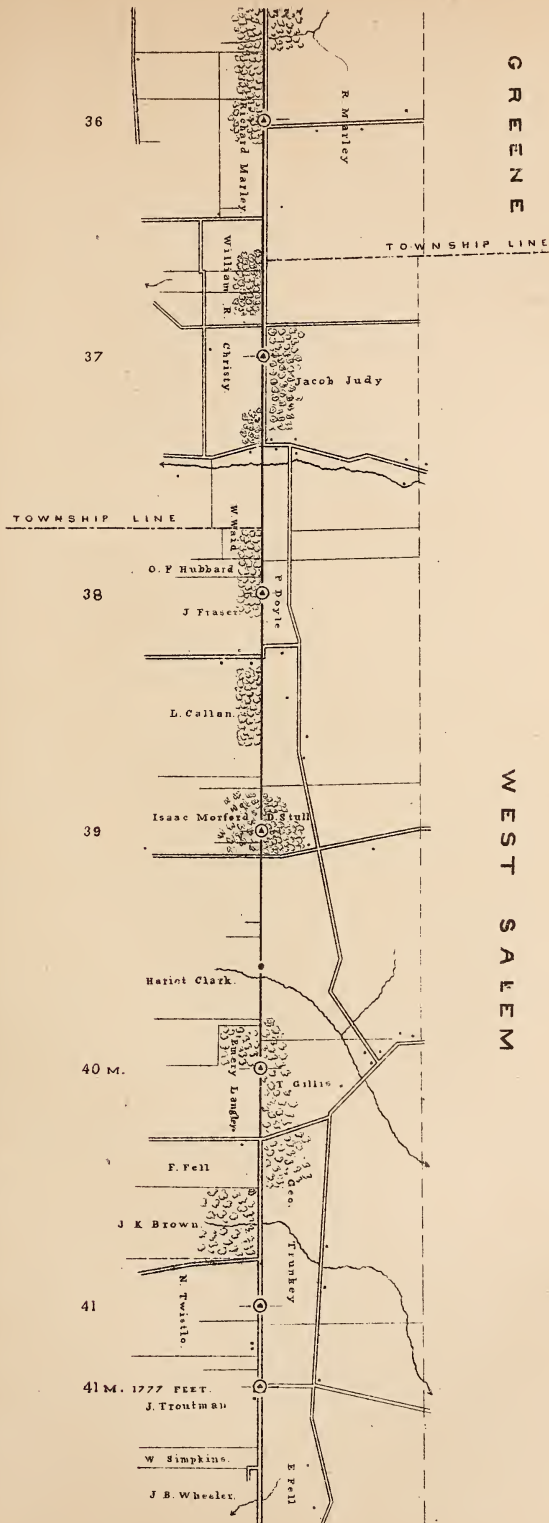
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TRUMBULL CO.

MERCER CO.

GREENE

WEST SALEM



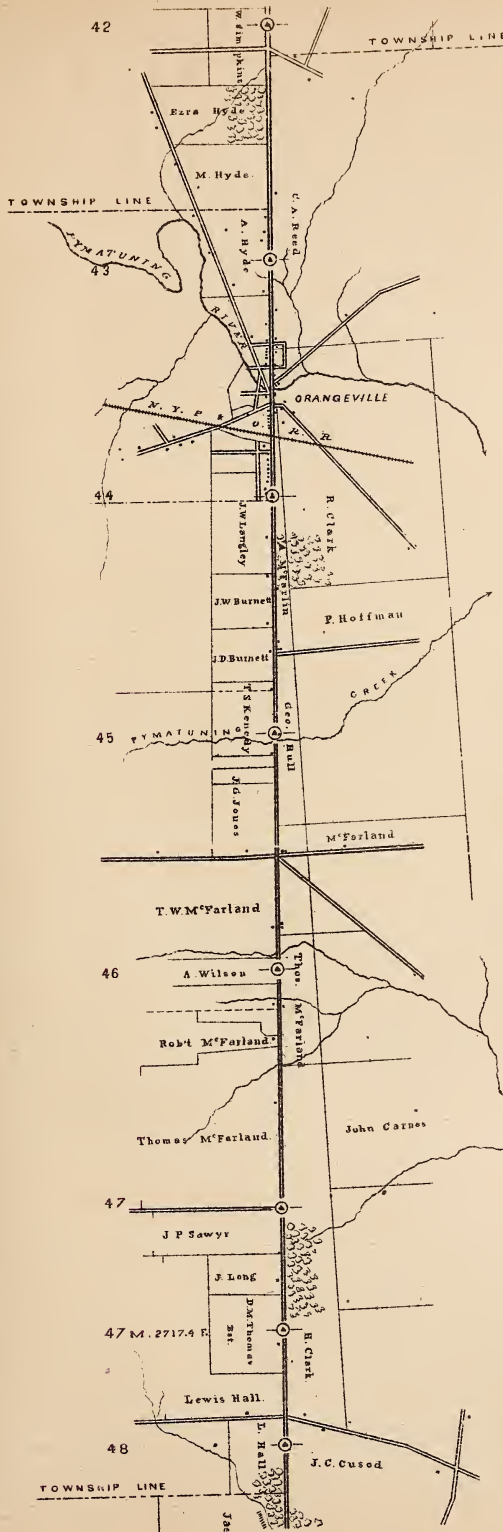
KINSMAN

VERNON

FRUMBULL CO.

MERCER CO.

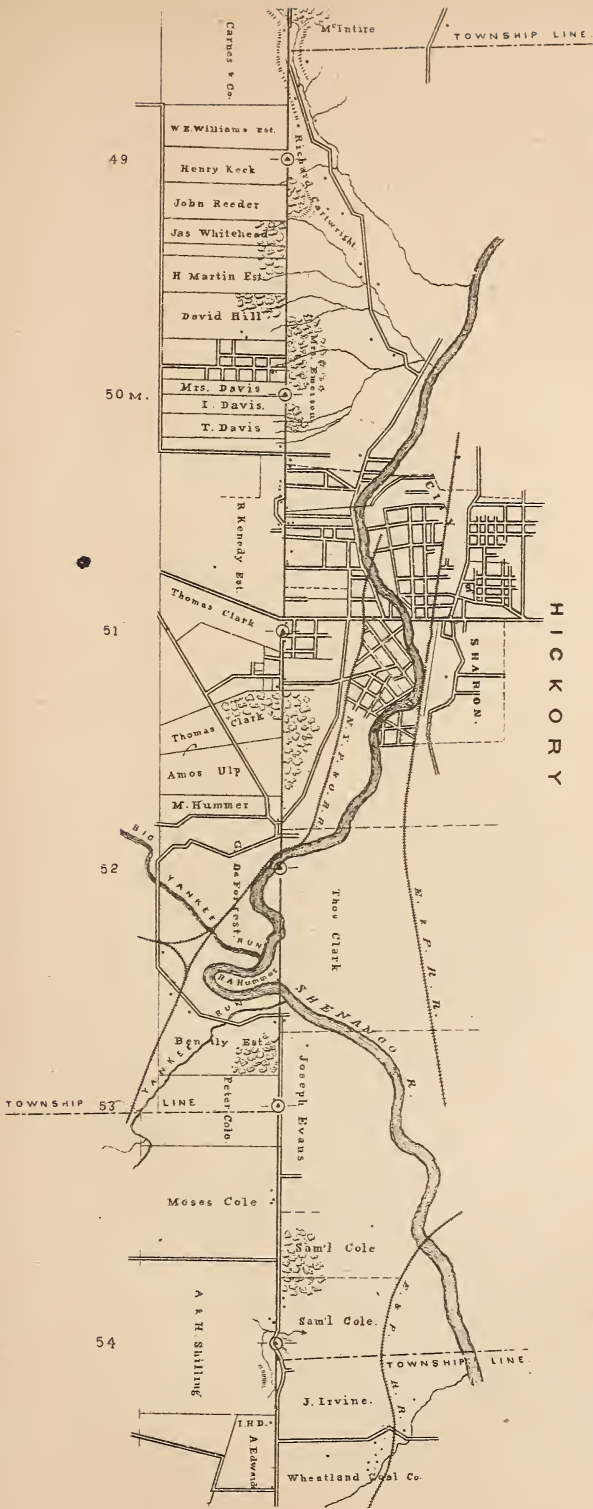
PYMATUNING



HARTFORD
TRUMBULL CO.

MERCER CO.

HICKORY



BROOKFIELD

TRUMBULL CO.

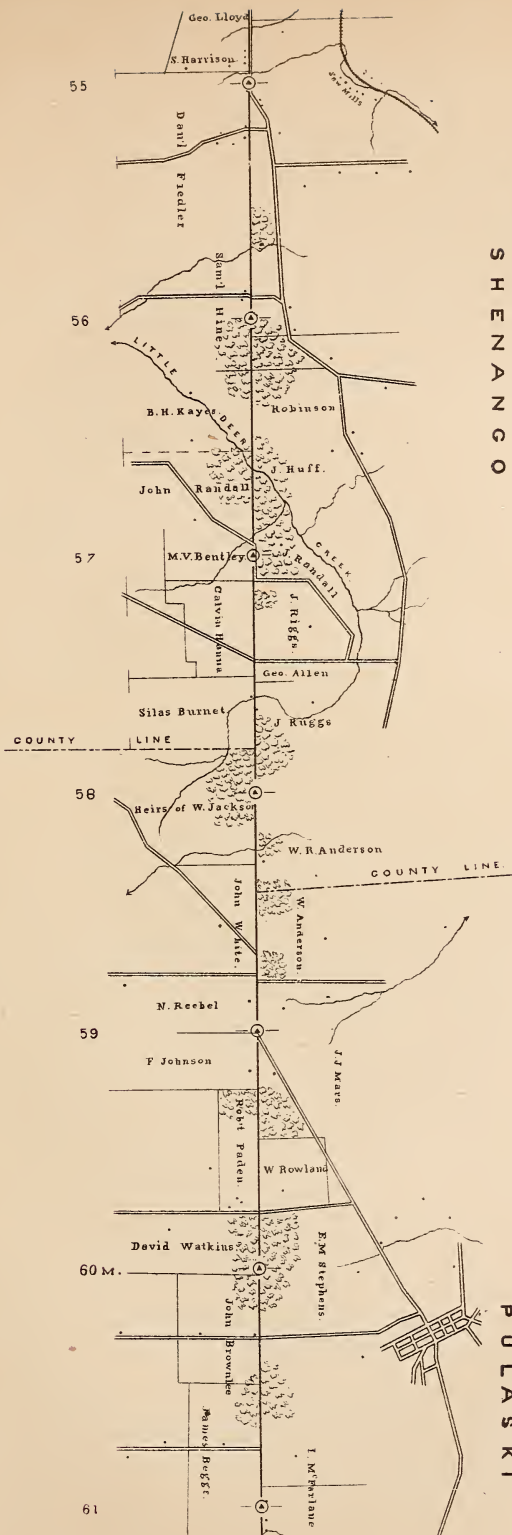
HUBBARD

MERCER CO.

LAWRENCE CO.

SHENANGO

PULASKI



HUBBARD

TRUMBULL CO.

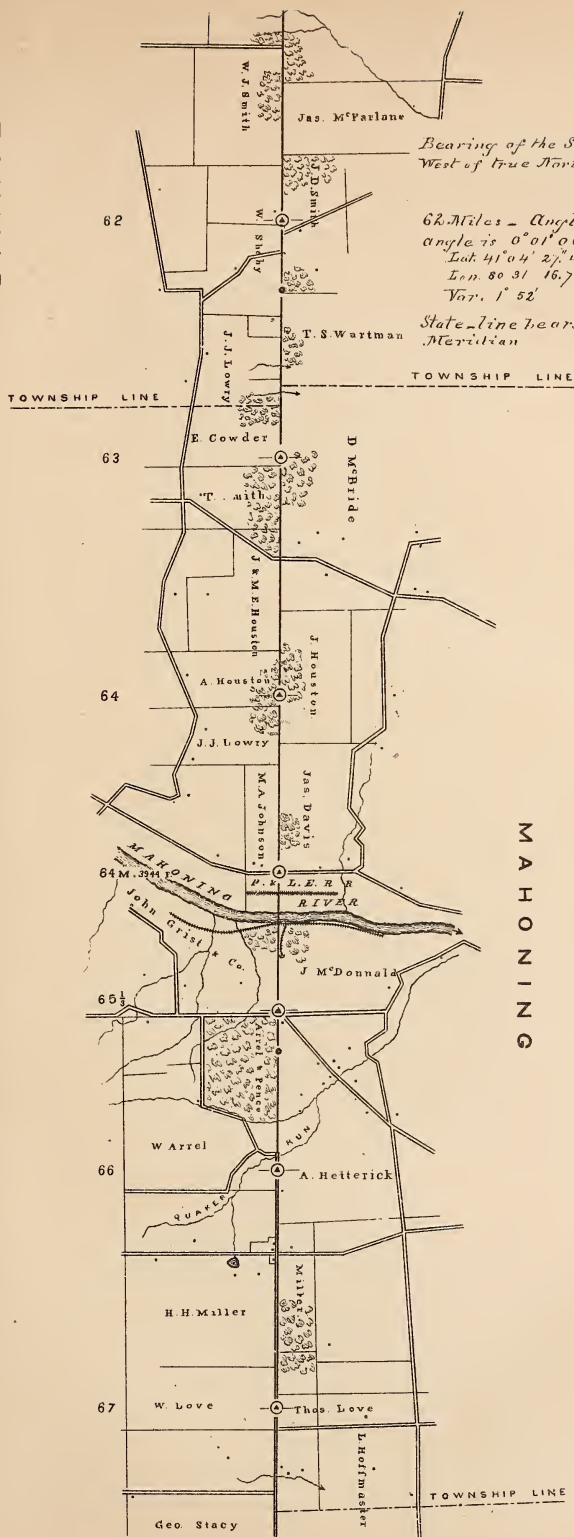
MAHONING CO.

COITSVILLE

COITSVILLE

MAHONING CO.

POLAND

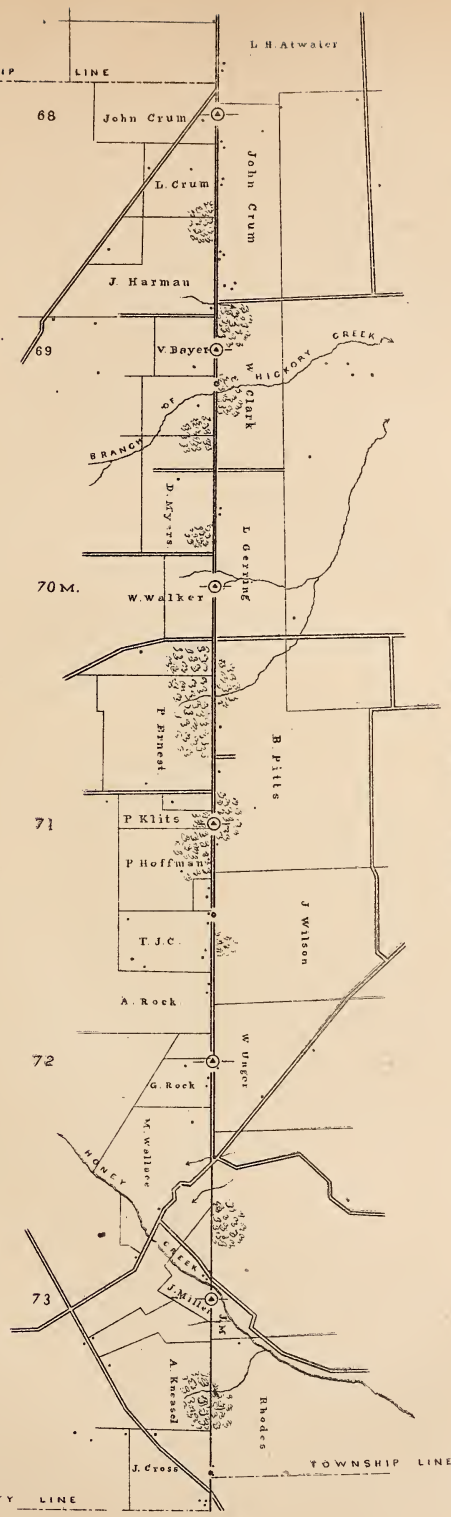


LAWRENCE CO.

MAHONING

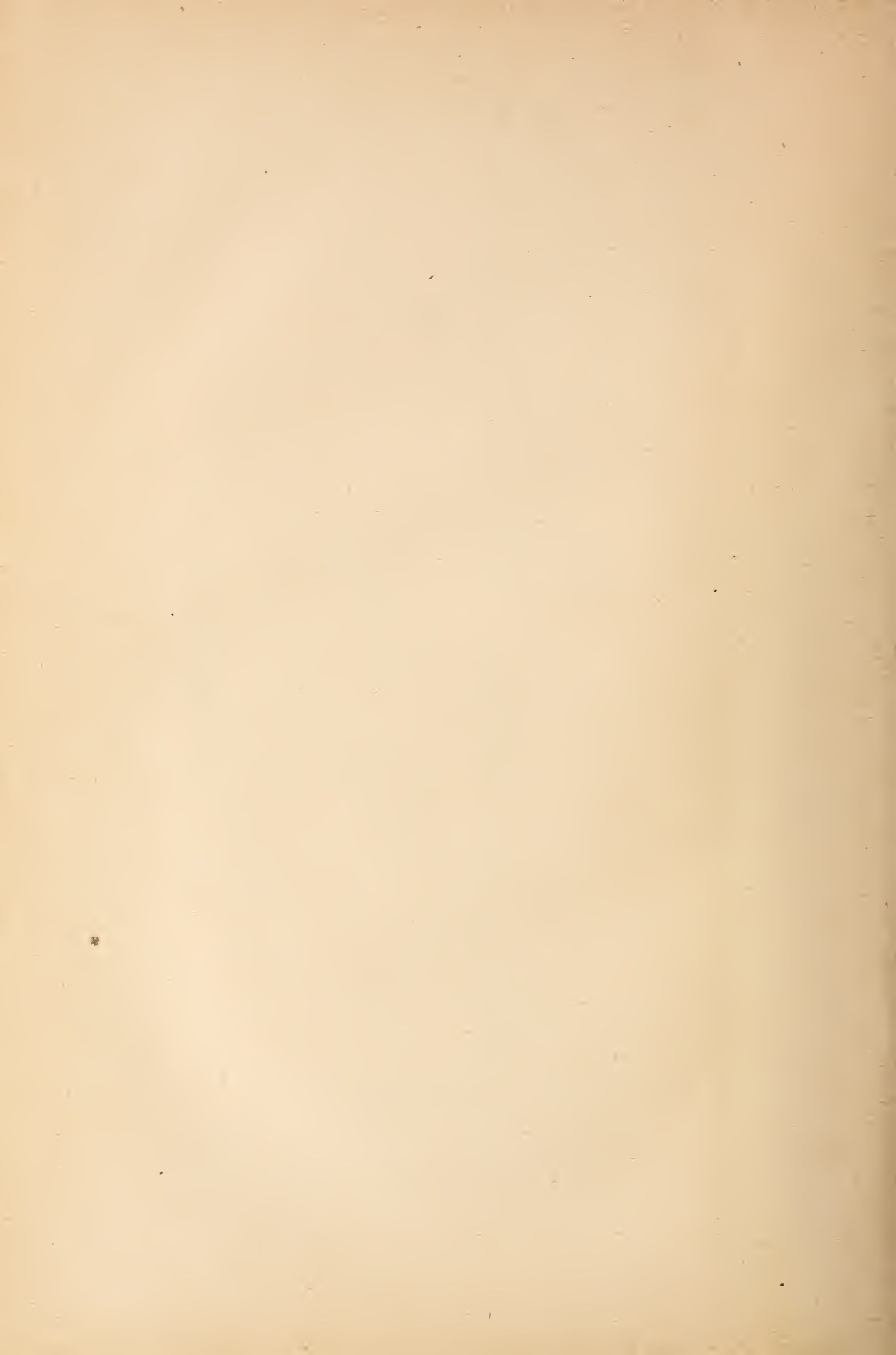
LAWRENCE CO.

NORTH BEAVER



SPRINGFIELD

MAHONING CO.

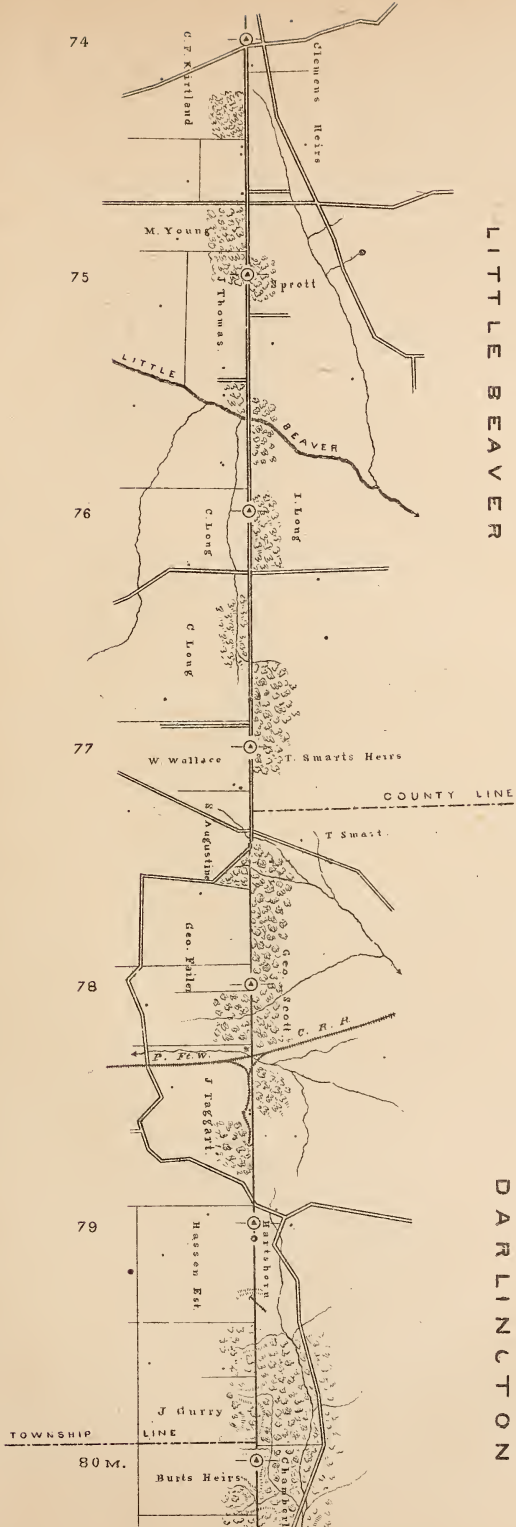


LAWRENCE CO.

BEAVER CO.

LITTLE BEAVER

DARLINGTON



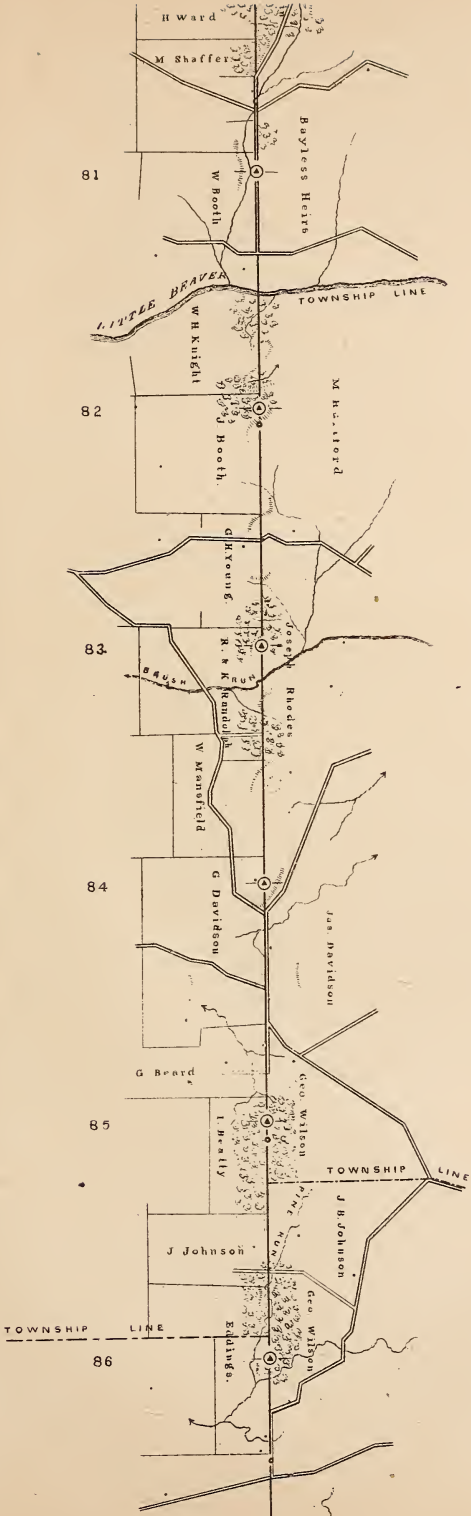
UNITY

COLUMBIANA CO.

BEAVER CO.

SOUTH BEAVER

OHIO

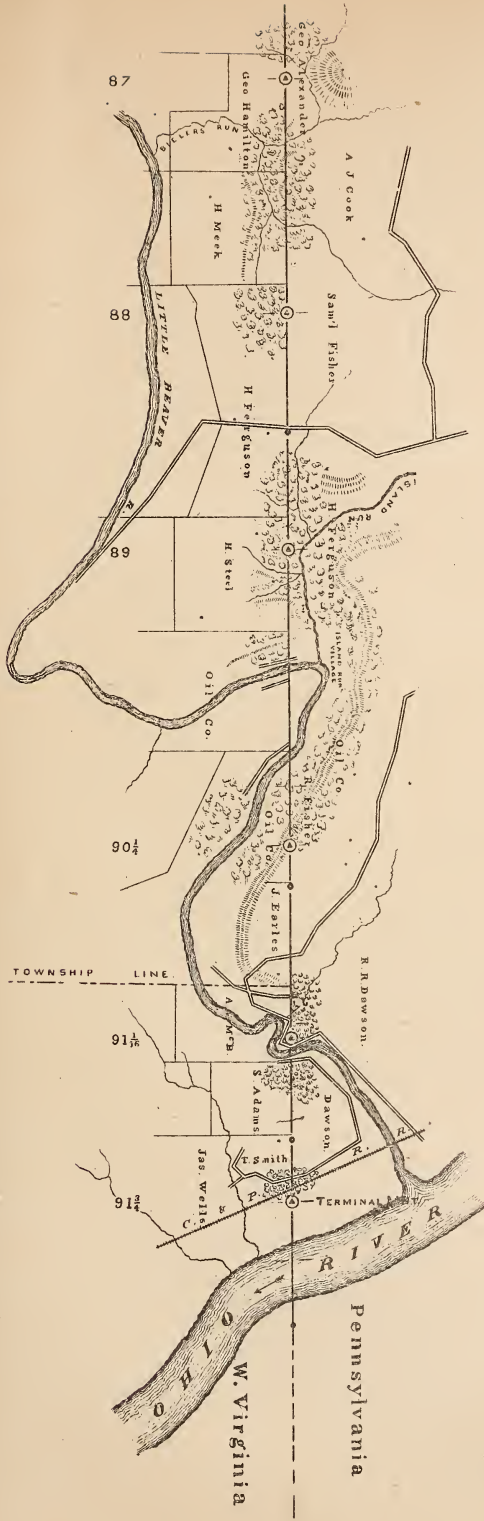


MIDDLETON

COLUMBIANA CO.

BEAVER CO.

OHIO



ST. CLAIR

COLUMBIANA CO.

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